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IN-SERVICE TRAINING STAFF DEVELOPMENT FOR EDUCATION OF  
DISADVANTAGED DEAF CHILDREN.

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CALIFORNIA STATE COLL., LOS ANGELES

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NINETEEN RECOGNIZED AUTHORITIES CONTRIBUTED TO A 3-WEEK  
INSTITUTE DESIGNED TO IMPROVE THE UNDERSTANDING OF  
DISADVANTAGED DEAF CHILDREN AND TO SUGGEST THE TYPE OF  
CURRICULUM BEST SUITED TO THEIR NEEDS. LECTURES,  
DEMONSTRATIONS, AND DISCUSSIONS COVERED THE FOLLOWING  
TOPICS-- (1) THE FAMILIAL AND PERSONAL ASPECTS OF THE CHILD,  
(2) ACQUISITION AND STRUCTURE OF LANGUAGE, (3) SPEECH  
DEVELOPMENT AND IMPROVEMENT, (4) SEVERAL ASPECTS OF READING,  
(5) AUDIOVISUAL AIDS, (6) PSYCHONEUROLOGIC BEHAVIORAL  
PROBLEMS, (7) AUDIOLOGICAL PROBLEMS, AND (8) RESEARCH. (MK)

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# **DISADVANTAGED DEAF CHILDREN**

## **INSTITUTE PAPERS**

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Jean Utley Lehman, Ph.D.  
Project Director

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**IN-SERVICE TRAINING STAFF DEVELOPMENT FOR EDUCATORS  
OF  
DISADVANTAGED DEAF CHILDREN**

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**INSTITUTE SESSIONS**

April 4-8                  June 20-24  
June 25-30, 1966

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CALIFORNIA STATE COLLEGE AT LOS ANGELES**

**U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE  
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## Introduction

The child with a severe hearing impairment is considered by most educators of exceptional children to be the most seriously handicapped child because of his language deficit. In cases where cultural deprivation is superimposed on the absence of linguistic function, the lack of communication skills is profound. The sociological, psychological, economical, and educational factors which permeate the environment of the culturally-disadvantaged child greatly augment the auditorially-handicapped child's inability to develop necessary self-concept and prepare for his integral participation in life with his family, peers, and society.

Educators and other staff members in schools for hearing-handicapped children from impoverished homes need assistance in assessing the deficits and potentials, and in providing experiences and curriculum, to meet the needs of the individual children.

A request for such a program was made by the teachers and administrators of the Hyde Park Boulevard School for the Deaf, Los Angeles, to the Special Education Branch of the Los Angeles City Schools, who in turn obtained the cooperation of the Special Education Department of California State College at Los Angeles. The program was coordinated by the college faculty with the support and assistance of the administrators of the city schools. The In-Service Training Staff Development Program for Educators of Disadvantaged Deaf Children was held during the weeks of April 4-8, June 20-24, and June 25-30, 1966. The meetings were held three

times weekly at the Hyde Park School which is located in an impoverished area, and twice weekly at the college.

Opportunity to attend was extended to any teacher or administrator in a program for deaf and severely hard of hearing children in the state of California. The program was considered an extension course through the college, and at the completion of the required registration, payment of fees, regular attendance, and essential assignments, the participants received one semester unit of credit per week. Total attendance was 682, representing 95 different people. Sixty-two registered and received college credit.

During the fifteen-day session, nineteen different nationally-recognized individuals presented formal lectures, demonstrations, and directed informal discussions relative to the application to deaf education in the following areas: (1) The Disadvantaged Child- His Status within the Family and Home; His Feelings; His Potential; (2) Linguistic Process, Acquisition and Structure; (3) Speech Development and Improvement; (4) Reading Process and Teaching Techniques; (5) Mediated Systems; (6) Psycho-neuro-behavioral Problems Involved in Learning and Communication; (7) Psychological and Audiological Implications; and (8) Research; Its Implication and Application. Video-tape recordings of the lectures and demonstrations were made for use in subsequent refresher courses, in-service teacher education and prospective-teacher preparation.

The following papers were presented during the program. The papers are grouped according to the sequential appearances of the speakers during the first, second, and third sessions.

## SESSION I

### Introduction to the Program - "The Problem"

Francis E. Lord, Ph.D.  
Director, Special Education Center  
California State College at Los Angeles

### "An Interpretation of Cultural Deprivation as It May Apply to the Deaf Child"

Robert Calatrello, Ph.D.  
Supervisor of Teacher Education  
University of California at Riverside

### "Language Development in Children"

Nancy Wood, Ph.D.  
Professor of Language Pathology  
University of Southern California  
(Oral presentation; no paper submitted)

### "An Audiologic Definition of the Disadvantaged Child"

Jacqueline Keaster, M.A.  
Director of Hearing and Speech Clinic  
Children's Hospital  
Los Angeles, California

### "Methods of Promoting Growth in Language and Reading"

Beatrice Ostern Hart, M.A.  
Assistant Principal  
Lexington School for the Deaf  
New York City, New York

### "A Multi-Media Approach in the Classroom for the Deaf"

Robert Schmitt, M.Ed.  
Assistant Project Director  
New Mexico Foundation  
University Park, New Mexico

### "Transparencies for Teaching Deaf Children"

Robert Schmitt, M.Ed.

### "Research Studies on the Psycholinguistic Behavior of Deaf Children"

Joseph Rosenstein, Ph.D.  
Director of Research  
Lexington School for the Deaf  
New York City, New York  
(Oral presentation; no paper submitted)



## CULTURE AND THE DISADVANTAGED CHILD

Robert L. Calatrello

My dear fellow-teachers: I think it important that we come quickly to an understanding regarding my purpose in being here this afternoon. I am more confident of what that purpose is not than I am of being able to define that purpose in terms mutually satisfactory to my intentions and your expectations. It is most certainly not to suggest methods of teaching deaf children. It is not to suggest methods of teaching the deaf or the hearing, the privileged or the disadvantaged. I hope to be of some service to you, however, in clarifying your own concepts of cultural differences, of socio-economic deprivation, and of constructing (if indeed you have not already done so) a realistic appraisal of your responsibilities and efforts as instruments of enculturation and mediators of social values.

Every child is, in a very special sense, the child of Everyman. Children represent our collective immortality and in each new generation we regain a portion of our own

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Robert L. Calatrello, Ph.D., Director of Teacher Education,  
University of California, Irvine

lost innocence. Which of us has not met the sudden, serious stare of a tiny infant without at sometime being possessed by the disquieting thought that its attention is held by a voice which we can no longer hear? It is not a romantic whimsey that childhood knows no race, no prejudice, is above hatred, and demands from the adult world a personal, individual confrontation, based upon the commonality of the human condition.

The infant Moses could have been slain by the edict of Pharaoh but not by the hand of Pharaoh's daughter. The adult captives of Indian tribes were tortured and slain, or enslaved; but their children were often adopted and cherished. Voices raised against the work of the United Nations seldom include in their diatribes a condemnation of that organization's feeding of the hungry children of the world. We are unwilling to see children, even of our enemies, starving or suffering, and we reserve a special feeling of horror for an act of violence toward a child. Its perpetrator is not human but "monstrous." Children are our gifts to posterity as well as its heirs; and each child, despite his parentage, possesses a unique claim upon the love, concern and protection of all men.

It is possible for society to live with the idea of "disadvantaged children," largely by ignoring the pain of direct confrontation, and its concomitant awareness of responsibility. For example, it is one thing for me to stand



here and define the culture of poverty, to describe the statistics of social and economic deprivation. You will be reached but not moved if I tell you--as is the case--that 500 children are injured in harvesting accidents each year in California alone. They are required to make this blood sacrifice in order that they and their families can exist, and so that you and I can buy a head of lettuce for 20 cents. Now some of you are putting in your notebooks that 500 children are mutilated, and you may even be touched and disturbed to know it, but until you feel it, until this situation which cries out to heaven for justice moves you to do something, (if it is only to put a bumper sticker on your car saying "Viva Huelga!") does your knowledge really mean anything?

The point I wish to make here is that there is a distinction between knowing and really knowing; or better, between knowing and understanding. To have a statistical awareness of what it may mean to be a "disadvantaged child" is not much help to you as a teacher. It may even be harmful if generalizations are permitted to take the place of direct confrontation, or to limit for you, by stereotyping children, the range of possibilities for personal interaction with any given child. Nevertheless, for the sake of your notebooks, and with the danger of such sociological data in mind, let us risk some generalizations.

First of all, "disadvantaged" is a term which you have chosen, not I. I have tentatively agreed to use it, however, I would prefer to think of cultural differences

rather than cultural disadvantage or deprivation. This may be why I find myself inserting "socio-economic" rather than "cultural," as a qualifier of disadvantaged. The term "disadvantaged" has relative meaning only, and is contingent upon some consensus regarding what it means to be "advantaged."

Let me sketch some further generalizations for you: The disadvantaged are poor. Harrington (The Other America, Penguin Books, 1962) estimates that there are 30 to 50 million poor in the United States, and this is defined in less generous terms than the recent definitions by family income (\$4,000 for a family of four) by the Great Society's poverty experts. Lower class homes are more crowded and Negro homes are more crowded than those of whites in similar economic circumstances. The upper educational level of the disadvantaged parent is low, ranging from 6th grade among Mexican-Americans in Texas to perhaps 10 grades of attendance (if not education) in more highly organized urban areas throughout the country. In a recent N.E.A. study (Harrington: 1962) 75% of the children of migrant workers in Texas, Florida and Illinois were retarded, by the definition of those states' educational practices. The environment of the lower-class home is far less verbal than that of the upper- and middle- class home. Not only fewer books were to be found in the lower-class home, but children were spoken to and read to less frequently also. Punishment was more likely to be immediate and physical.

Socially disadvantaged children are more likely to be afraid of parental authority and to depend more upon sibling and peers more than middle class youngsters. Mother-dominated or matriarchal homes are more prevalent in lower class than middle or upper class homes, and more likely to produce under-achieving boys and achieving girls. The latter achievement pattern is a frequent one in Negro homes, with a similar pattern of sex determined aggressiveness. There is more likely to be one parent in the home of the Negro child than of the white youngster, and that parent is more likely to be a working mother.

That is our daily ration of sociological "truth." Notice that is descriptive rather than prescriptive. It is almost always easier to discover what is wrong than to cure it, or even to interpret the real meaning of what one discovers except in artificial isolation from the human context in which the condition exists. Yet when we remove information or social data from its human matrix in order to study it; unlike isolating a virus in a biological laboratory, we are likely to destroy the cogency and real meaning of the very thing we are hoping to better understand.

The one thing which stands out most clearly to me in any study of the "disadvantaged" is the fact that they are different. Are they poor? Yes, but often not as poor as a middle-class Arab or an upper-class Arapesh native. In short they are poorer than most people in an affluent society,

and as it becomes more affluent they become poorer; even if their material well-being should increase somewhat. The measure of poverty is, once subsistence is assured, in fact a measure of the general affluence, its concepts and its values. Here is, I believe, the real issue and the real challenge for us: to see ourselves as we attempt to see the "disadvantaged," and to be willing to modify or at least open our minds to the possibility of modifying, our own concepts as well as theirs. We must learn to distinguish between what is real and absolute in the human condition and what is simply an expedient, and often self-centered, point of view.

It is always tempting to pick on the Negro as a source of illustration, study and example in considering the disadvantaged; however, I shall reject the "easy-out" in favor of giving our Negro brethren a bit of rest from sociological nit picking and turn instead to the "vanishing" American. Alas for our national conscience, he has not had the good grace to vanish and become thereby a "good Injun." The Negro has been accused of complicity in coming to America, but not so the Indian. He was not only here before Columbus, but exists today in greater numbers than when the white man found him here.

Well, let me tell you a modern Indian story. A group of Indian children were attending the reservation school near a Western city when they were integrated into the local

public school system. According to report, all went well at the 'white eye's' school until the fifth grade science class began a discussion of weather conditions. Now it happens that this particular group of Indians has a strong religious conviction which includes the cosmological principle that rain is caused by the urination of the Great Frog. The youngsters brought their new information back home and when this was revealed to the orthodox ministerium of the tribe (i.e. medicine men) they were deeply affronted at this attack upon their faith. They assured the children that the 'white-eye teacher speaks with forked tongue," and furthermore was teaching a Godless, atheistic materialism. Complaint to the city school authorities brought no relief. No text book even footnoted the possibility that the Great Frog was the dispenser of rain, and the school-board held that the children would have to learn the modernistic concept of climatology accepted by science. The school-board took an unequivocating stand in favor of science and truth.

In another Western state, a year later, a group of fundamentalist clergymen complained that the textbooks furnished by the state suggested some alternatives to the belief that the world was created in six twenty-four hour days. The textbooks were promptly banned from the state.

Now the issue is not the truth of the beliefs held by either religious group, but the fact that they were



religious beliefs which were able in one instance to sway the policies of the schools and in the other instance were not. One belief was not more empirically plausible than the other, but one belief was held by representatives of the dominant culture and the other by a minority within that culture. If one could convince, through powerful evangelism, some millions of American citizens that the Great Frog was indeed the giver of rain, it is a safe bet that followers of this doctrine would obtain respectful hearing and modification of the curriculum. Values are values because people make them values, and it is what people and how many people that determines the importance of certain values.

One white teacher on the reservation describes Indians as having no culture because they had never seen an escalator, had no music, had leaky faucets and had never (God help us!) seen an atomic bomb. Should one assume that the converse of all these things constitutes culture? Incidentally, it is interesting and perhaps even threatening, to note that the city which rejected the teachings of our red brothers relative to the vital influence of the Great Frog in the lives of men was, only a year later, subjected to unprecedented rainstorms which did considerable damage to highways and other public works. Provoke not the wrath of the Great Frog!

Well, fine, but why all this about Indians. We are concerned about the disadvantaged. Well, if the "disadvantaged"



are so defined because of their "differences" one must be reasonably certain that these differences are meaningful of themselves and not simply because we attach our own meaning to them and are not instead simply prejudiced in favor of our values because they are our own. As our own, these dominant middle-class values may perhaps exist in our own minds rather than having reality or existence in any consistent ethical practice.

We, for example, value smaller families with a higher standard of material benefit accruing to each of its members, and yet as Reissman points out, there are benefits of socialization and human relationships in the larger family and in the extended family that we often sacrifice in favor of two cars, new furniture and a larger home in a better suburb. We value speed in learning, the timed test, and yet it is a questionable assumption that he who learns something more quickly learns better or more than he who learns slowly. We value family stability but we change spouses in much the same way and for many of the same reasons that we buy a new car. Not because the old one has failed us but because we feel that the new one is so much better. It is an expensive luxury, but we can afford it and there is no really substantial loss--and perhaps a gain--in status thereby. The poor, however, either "make do" with the old spouse or they are often forced to do without a legal endorsement for junking the old model, and be-

come "immoral." The act is the same and the difference is merely symbolic or legalistic. Why a succession of M.A.R.S.<sup>1</sup> is more damaging to children of the lower classes than a succession of legal spouses is to the child of the upper class, has not been explained to my satisfaction. Many "socio-economic differences" are similarly "symbolic."

Professor Dodson of NYU describes disadvantage as an absence of power leading to impotence, frustration, and dysfunctional aggression. The "disadvantaged" are often powerless. According to Jefferson's maxim that power corrupts, they should be free of corruption. Poverty is a glass house. Illegitimacy and abortion provide cases in point.

We are well aware that illegitimacy and abortion are associated with the stereotype of the dingy disadvantaged. Let's take the cases of two fifteen year old girls who became pregnant, one from a minority, welfare-supported home; the other the daughter of a middle-class home. When the family is aware of the situation in the latter case, the chances are that they will be the only ones aware of it. Little Louise either is out of school because of mononucleosis, visits her aunt in Arizona, or has an emergency appendectomy in which a healthy appendix is removed and some embarrassing physical complications are removed along with it.

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<sup>1</sup> In Welfare parlance, "Male Assuming the Role of Spouse."

In the case of the welfare family, that "brazen little delinquent girl has an illegitimate child" just as the teachers at P.S. 608 predicted. After all, hadn't her sister dropped out of junior high for the same reason? Of our two cases, one is a statistic and one you will never hear about. Which girl is "bad?" Which is corrupt? Probably neither. Social and business obligations may have reduced parental influence for the product of the stable middle class home to the same degree that desertion and poverty have done so for the daughter of the poor. The same causes may have led to the same effects, but the sins of the poor are public property.

While social response to the situations engendered by poverty and prejudice is important, it often seems to be only symptomatic and avoids the issue of value-conflict which is indeed at the heart of the matter. When the disadvantaged child comes to school he meets a teacher who demands he accept a different set of values than those which he brings with him and to which he will return at 3:15. He meets the teacher and here too we will meet the teacher.

A teacher is a rather unique creature. She, too, stands at the doorway of the middle-class, often just inside. The characteristics of the teacher in America do not auger well for the disadvantaged child. It may be said of teachers, as I confess it has, that, "We have met the enemy and he is us." The average teacher (and we are

willing to talk about the average child thus there should be no shrinking from discussing the average teacher) is the upwardly mobile son or daughter of the lower class. She is likely to derive her own sense of social status from the children she teaches. (A "good school" is as good as the children who attend it--reward in teaching consists of assignment to a "good" school; punishment is a trip to Watts.) She is resentful of any challenge to the values which have served so well on her recent journey up the social ladder. She is, perhaps, contemptuous of those who have not "made it" as she has herself. She is not too bright, as college graduates go. She and her colleagues ranked at the bottom quartile of college graduates. (If the disadvantaged home is "anti-intellectual" will she be an apostle of intellectualism to its children?) She has the symbol but not the substance of education: a B.S. from Swampwater State College (nee Swampwater Normal School).

She is inclined to neurotic behavior and emotional disorder to a greater degree than members of another professional or semi-professional group. She is insecure (new social status) and often tends to assume the characteristics of the age group she teaches. (Can she be counted on to provide a sense of emotional stability for the disadvantaged?) The Greenhill Report to Mayor Wagner reported that 40% of children between 3 and 16 reacted immediately with a variety of emotional and physical symptoms to the effects of violence in their disadvantaged neighborhood.

A conforming individual, she has entered a profession characterized by the assumption that it knows the best ways of life. If, when discussing in a social studies class, a Negro youngster says, "To hell with your democracy," how can we hope for her to react? If a threadbare, latch-key child, in his big brother's old gym shoes, derides the economic opportunities of a democracy, how will she respond? Can she put her arms around that pregnant disadvantaged child we mentioned earlier with her leather skirt, her boots, her cheap perfume, crude make up and revealing figure, and give her any help, any love, any human compassion and more important understanding?

It is the age-old problem we confront: not who or what are other people, but who are we? What are we? We need not accept the values of our students, but in understanding theirs it is indispensable that we understand our own. Then it becomes possible to act with consistent dignity, unthreatened by the differences, because we are supported by an awareness of the more profound commonality provided by the single, shared experience of being human.

What I am calling for here is a profound change in the teacher as prerequisite for a profound change in the student. The teacher must become not a thing but a person herself; only then can she respond to students as people, not things.

From this point we can assume values as pragmatic entities, useful instruments for operating in a society



which is and which will probably continue to dominate any of its constituent parts. Relating these values to the student's situation then becomes a one-to-one problem between the teacher as a person and the student as a person. The tension can relax because the teacher has no need to associate her own personal identity with her success or failure to dominate the student, or to elicit responses congruent to and appropriate for the teacher's own life experiences. The teacher is freed to give and to receive within the context of the only real relationship possible-- that of individual, human confrontation. Here is where teaching and learning occur, on both sides, without this there is nothing.

The physician learns from his patient what the ills of the patient may be. This is his frame of reference. Strangely, we think it very commendable of a teacher when she confesses that "I learned a lot from my students." This is a strange situation. We ask what unique happening took place? How creative her classes and her teaching must be! Good heavens, where else would you learn what your students need and how best to teach it, if not from them? I promise you that if you do not learn it from them, you will not learn it from me and probably not from anyone else.

Now what of the deaf child? You know deaf children, I don't. I don't even recall ever having met one. I remember a fellow student once who was deaf and hopefully

someone must have taught him something because he is now a Lutheran minister in Illinois. I confess also a suspicion that his affliction may not be wholly without benefits both to himself and his parishioners, particularly to those with a need to confess their weaknesses. I have no inspirational stories of teachers of the deaf with which to regale you, and for all I know my former fellow-student may have tapped the mission fund and fled the country with a member of the choir, and may now be publicity agent for a faith-healer.

Let me offer some hypotheses regarding the disadvantaged deaf.

1. Robert O. Blood and Donald Wolfe, in a study of Detroit families, note that "Negro husbands have unusually low power," and this is characteristic of all low income families. To carry this on, of about 44% of Negro families studied, wives were dominant as against 20% of white wives. Not an illogical extropolation to say that this ratio extends validly to the population at large. The evidence indicates that the culturally deprived child is more than twice as likely to be from a maternally dominated home. Now if we take this evidence and add to it the conclusions drawn by Levy in his study of maternal over-protectiveness, we can assume that the handicapped child from a

culturally deprived environment is far more likely to be encouraged into emotional immaturity and dependancy than a similarly handicapped child from a more nearly average family environment.

What this may mean in terms of parental cooperation or lack of it, we will discuss shortly. I suspect, however, that research would indicate a less willing parent and a less motivated male child. A female child would be more motivated but less motivated than middle-class girls.

2. It would be a cruel joke, but not an implausible situation if the child with two handicaps-- cultural disadvantages and hearing loss--did not have a better chance for success than his hearing brother or sister. He might find less pressure from "the street" and its temptations, earlier identification and special attention, or removal from an injurious or disadvantaged environment by institutionalization.

3. Technology and automation may provide increasing opportunity for high status occupations where deafness is not a handicap. The disadvantaged child responds to arithmetical and quantitative reasoning more than verbal, which may work to the advantage of the disadvantaged deaf.

I have treated the specific nature of what it means to be a disadvantaged deaf child by suggesting some hypotheses. It is not much, but more perhaps more than I am qualified by training or experience to do, and more than this would be an intellectual exercise bordering upon presumption. We have explored together two areas in which I feel some competency: the nature of cultural deprivation and the nature of the teacher. During the next forty-five minutes let us wrestle with these ideas, share our experiences and insights, and examine the suggested hypotheses and the other issues raised here in the light of our own experiences and awareness.

#### Conclusion.

Possibly there were no two people in the world whose philosophies were farther apart than John Dewey and John XXIII, yet both were teachers and were concerned with the teaching done by others. They came together in one idea: the apostleship of teaching. Each saw it as a particular calling, a ministry requiring a peculiar dedication and intense commitment. I would not be offending the shade of either of these great men, whose spirit and ideas spanned the ages, in reminding you that you cannot avoid the proposition that what you are will be learned far more effectively than what or how you teach. What you are will be heard and very clearly by the most deaf, the most disadvantaged; indeed, even the dumbest of these, will both hear and understand.

## AN AUDIOLOGIST'S VIEW OF THE DISADVANTAGED DEAF

Jacqueline Keaster

Many years ago, long before the term disadvantaged was even heard of, a middle-aged man dressed in work clothes with a tanned, weather-beaten face came into my office and sat down by my desk. The doctor had just told him, he said, that his 12-year old daughter was hard of hearing and he was going to have to learn to help her adjust to it. And with deep concern in his voice he said to me, "Ma'm, I'm just an ignorant farmer, what do I know about helping a hard of hearing child?" My reply was something to the effect that I didn't suppose he knew much more about it than I would know about tilling the soil, planting the seed, and harvesting the grain on his farm. Then I asked him how many acres he farmed, what he raised, and what were the prospects for that season's crop. He warmed to the subject, giving me intimate details of his and his family's life on their Iowa farm. By the time he had finished he had established himself as a man of knowledge in his chosen work, capable of providing well for his family rather than the "ignorant farmer" he had thought

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Miss Jacqueline Keaster, Director, Hearing and Speech Clinic,  
Children's Hospital of Los Angeles



himself to be when he came into my office only a few minutes before. It was only then that we could begin to talk about his child's hearing problem. She needed a hearing aid. We talked about how it could be purchased, how much it would cost, how much it could be expected to do in helping her to cope with her problem. We secured consent from him to send copies of our report to the local school in order to help the teacher to understand the problem. We suggested return when the crops were in in the fall. During the hour spent with that father on that long ago afternoon, we didn't teach him much about his hard of hearing child, but by establishing a feeling of mutual respect, we made it possible to teach him a good bit on succeeding visits. His daughter as a result was able to keep up in her class in the local consolidated school rather than having to go to the State School at Council Bluffs where she didn't really belong.

To me, this 12-year old child was one who might today be classed among the disadvantaged. Her family, to be sure, had been in this country for several generations but they were country people whose very lives were rooted in the soil. Their aspirations for their child were limited to eventual marriage to a local boy and life on a nearby farm. In working with her and her family we needed to be aware of these things and to act accordingly.

Now, many years later and half a continent away the faces are different, there are different language barriers,

certainly that didn't exist in rural Iowa. Here many of the parents speak better Spanish than they do English. There many of them came from low German or Czechoslovakian backgrounds and spoke those languages better than our own. Differences probably that don't really make a difference. The basic problems in dealing with the children from such homes are probably about the same.

1. How can we best convey to parents of a deaf or hard of hearing child our basic respect for them as people and for the problems they face.
2. Having established a basis for communication, how can we help them to understand the ever changing problems imposed upon their child and indeed on their family life by the hearing loss.
3. How can we so empathize with the cultural differences within our patient load that we do not find ourselves in the position of the supervisor of speech improvement in the New York City Schools who was said to have only one aim in life "to make all the little Brooklynites sound like white, Protestant republicans."

In the course of a month, we in the Hearing and Speech Clinic, Childrens Hospital, see on an average of about 150 different children. Some of them come to us for consultation from a pediatrician, an ear, nose and throat specialist, a neurologist, a plastic and oral surgeon or from the family

doctor. Mother has come to him with a complaint that she thinks that Johnny doesn't hear. He is two years old now and is not yet beginning to talk. The problem that he presents may or may not be a hearing loss but most patients so referred have families who are able by virtue of their educational backgrounds and financial status to carry out suggested treatment or educational planning. We shall not talk too much about that group this afternoon.

Another group of patients come to us on referral from one of our own Out Patient Clinics. Here a child's visit to us is usually part of a total work-up. His family was not able to pay for the services of a private doctor so he was brought to Childrens. Perhaps they too were concerned because they feared that the child might be deaf. At two, he was not yet beginning to speak and did not seem to respond when he was spoken to.

Sometimes the patient and his family have only been in this country a short time and do not speak English. On one such occasion a Korean gentleman came to us with his four year old boy. On the day he was seen in Medical Clinic a countryman had accompanied them who spoke English. But on the day we saw him they came alone. The child was very bright. By means of sign language, gestures, both hand and facial, we were able to test the boy's hearing. There seemed to be little doubt that he had a serious hearing loss. The next thing was to convey our findings to the father, an obviously concerned

man. Among our employees we have people who speak many oriental languages including Korean but that day all those people were on their day off. The man, sensing our dilemma, took a little book from his pocket and pointed to the telephone number of the Korean Embassy. We called and there spoke with an interested woman to whom we told our story. She knew our patient and his father and said she would tell him in Korean what we had told her. She also volunteered to help to carry out plans for the child's care.

On another day a mother came in with two children, one who was a little boy we had followed since he was about two years of age. At that time, he was 10 years and in school wearing a hearing aid. The reports were that he was doing reasonably well. The other child was almost five and obviously a severely deaf youngster. We had never seen her before. When we asked mother why she hadn't brought her in sooner, she replied, "Because you people would have taken her away from me and sent her to school. She is my baby and I wanted to keep her for myself." To our way of thinking hers was a selfish kind of mother love but at that point there was little to say other than that we hoped the little one could be in school with the beginning of the fall semester.

In the files of the Hearing and Speech Clinic are records of the oto-audiologic evaluation of about 3000 children seen through Crippled Children's Services since the beginning of the clinic in 1953. Each of these examinations has been paid

for by the county from which the patient came - the preponderance, of course, from Los Angeles. By the very nature of the service one would expect to find a great many of the disadvantaged represented in this group. This being so, we pulled the records of about 500 such patients and some interesting things emerged. About 35 percent of the children seen on this service are off spring of Mexican-Americans. Some are second and third generation who are eager to learn how they can help their deaf or hard of hearing child. There are others who simply do not see any point in all that we try to do. It is like pushing a large boulder up a high hill, only to have it slip and fall down again when you get to the top. They will sit and politely listen to all that one has to say about what needs to be done to help their deaf or hard of hearing child. They nod their heads in assent and go about their business doing nothing.

Included also among our CCS patients are the children of families who have recently come from below the border. They have found work as ranch hands in remote areas of the county where educational facilities are not what one could call ample even for the normally hearing child let alone for the one handicapped by deafness. One such instance is that of a five year old who is profoundly deaf. His hearing problem was not discovered until Dad brought him to school when he was five. His parents work on a ranch near Newhall. They knew he did not speak and thought he must be deaf but didn't



know what to do about it. As of now, this child is in kindergarten, ostensibly, learning to be with other children his own age. We have had long discussions by phone with the school people who are doing the best they can for this child. It's an uphill road. Eventually they hope that he will be accepted at Riverside. There is no other school available.

Among our CCS patients there are many who require hearing aids. Procuring the instrument is no problem whatsoever, but to keep it in batteries and in working order is sometimes a very different sort of thing. When the first battery runs out or when the cord becomes frayed and no longer carries the sound to the receiver the aid is put in a drawer and the child no longer wears it. On the day that a CCS patient picks up his hearing aid, we try to explain how it works to the parents in such a way that they are able to support a child in its use. We emphasize the point that it is an aid and not a substitute for normal hearing. We urge them to see that it is worn as a matter of fact at home as well as at school. In many instances, CCS supplies the batteries and maintenance. All the parents must do is call when the child needs a new supply. But sometimes through just not knowing what to do and sometimes it would seem simply from pure lethargy, nothing happens.

And then there are the ones who try their very best to help the child to wear the hearing aid. In one family we know, there are five children, the oldest just six. The two

oldest were in school at the time of this incident. The three year old, Holly, who was deaf had just gotten her hearing aid. The two youngest were down for their afternoon naps. Mother got a book and the hearing aid and sat down for a quiet time with Holly. This ritual she repeated daily for about a week. Then came a day when something interfered. Mother put the hearing aid on the little girl and sent her out to play. Later that afternoon, mother called us in tears. Her daughter had taken off the hearing aid and buried it in the sand. Our relationship with the mother was such that when we laughed at her predicament she was able after a while to laugh too. And then we went on to explain to her that the child's action was only too eloquent a protest over her loss of her mother's attention. Actually the child's behavior had nothing basically to do with the hearing aid. The last we knew this child was doing well in one of the county programs for deaf children and wearing the hearing aid as part of her clothes.

Among our sample of five hundred patients, we found many who are multiply handicapped from the so called disadvantaged groups. There were twenty children with a diagnosis of mental retardation as well as deafness. Here we find that careful guidance is important, after ascertaining which is the child's primary handicap. We are sometimes grateful when such a youngster comes from a home where expectations for his achievement are not too high. He tends to fare better

In such an environment. The child with cerebral palsy as well as deafness is frequently a real problem in placement. One such child that we know has a third handicap as well in being a slow learner. He is the much loved, youngest child of a large Mexican-American family. At four he was very difficult to evaluate. Mother had infantilized him to the point that it was difficult to know just how much of his communication problem was hearing loss and how much of it was that Bobby was just a baby. He is now nine and in a school for Cerebral Palsied children. He is wearing a hearing aid. We feel that he might do better in a class for slow-learning, hard of hearing children. If there is a place available in such a class in the fall, an effort will be made to try such a placement. The parents of this child are uneducated people, but ones who have tried to follow every suggestion made to them. Educationally, Bobby will not go far but one can hope that he will one day have a kind of independence. Along the way he has had a great deal of love and acceptance.

One could go on and on sighting the problems of the disadvantaged among our group: There was the Negro child newly come to California from the deep South who at 12 had never been to school. His mother very innocently asked us if we knew where Arkansas was. And then there is the child of migrant farm workers who had never been in one school long enough to get accustomed to its ways. And the young Chinese who at ten had just landed from Peking. He had a very serious loss and little previous schooling and the little Mexican boys aged 10 and 11 with a skin condition causing a complete lack of hair who matter of factly

took our their dice and began a game of craps as they waited their turn! Last of all we think of the little Indian boy from Bishop who asked the doctor when he had finished examining his ears what he was going to do now. The doctor replied, "I'm going to squirt some powder in your ear." The little one replied "Allright, honey!" This little fellow is in a boarding home and has seriously infected ears that cause him a rather considerable hearing loss. The problem is largely one of neglect. Now CCS has taken over and an attempt is being made to at least restore a semblance of hearing to this child.

And so in working with our polyglot population we try very hard to:

1. Build mutual respect as a base upon which to work with the parents of the deaf and hard of hearing children that we see.
2. We try to help the parents to understand the problems imposed by deafness and their role in helping the child to adjust to it.
3. And we try very hard to keep in mind that a realistic goal for one child may not be for another.

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## PROBLEMS IN LANGUAGE AND READING

Beatrice Ostern Hart

The devastating effects of deafness stem from the fact that deafness severely retards language learning, and hence limits mental growth.

1. Why is vision a less efficient channel for learning language than hearing?

A. Psychologically and physiologically, the ideal time for language learning is in the child's early years. The deaf child, who is getting no sound clues, functions visually. The world is from the start less meaningful to him. It is a silent screen. He does not utilize his earliest years for linguistic learning, and he may early develop the habit of passivity.

B. Quantitatively the deaf child's exposure to language is a fraction of the hearing child's. The hearing child cannot help but be exposed to language. He is constantly bombarded with

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sound and speech. The deaf child misses sound completely and can miss speech unless special efforts are made to bring it to him. The hearing child uses both vision and audition; the deaf child is limited only to vision.

- C. Qualitatively, the language the deaf child receives differs from the language received by the hearing child.
1. Compared to language that is heard, language that is lipread is fragmented, ambiguous, lacking in redundancy.
  2. Possibly the earliest linguistic clue that the hearing child responds to is intonation. The deaf child is not only deprived of this clue at the crucial developmental stage, but never enjoys this important aid to linguistic meaning. The same is true of two other important clues to linguistic meaning - stress and juncture.
  3. The hearing child receives language effortlessly; it surrounds him. In order for the deaf child to receive language he must attend with great concentration. Whether he is lipreading or interpreting finger-spelled language, the kind of attention and analysis required are extraordinarily demanding.

4. The adult communicating with the deaf child automatically adjusts his language, simplifying it considerably. Not only does the deaf child not overhear language casually (whether directed toward him or not) but what he gets must be considerably watered down, reduced and oversimplified. I recall that I learned a language which my parents used only in conversing with each other. Never did they use it in speaking to me, yet I learned it and learned it well because what I heard was adult language, not language simplified for a child.

D. The deaf child gets no feedback; he cannot monitor himself. He misses an important psychological inducement to learning, and also is forced to depend on others for evaluation, being deprived of an important means of self-correction.

II. Despite these considerable difficulties, the deaf child, like the hearing child, must somehow learn to respond to and use language. What skills must he master in order to achieve this? And what problems will he encounter?

A. Basically, language consists of lexical and structural elements. In learning the lexicon, or the vocabulary, what difficulties does the deaf child experience?

1. Because he does not hear as many words, nor does he hear the same words used as often and in as many different contexts, the deaf child's vocabulary is limited.
2. He will learn fairly easily words which are common and in his immediate environment. However, words that
  - a. are used infrequently, even though they are concrete (e.g. casserole), or
  - b. don't have visualizable referents (e.g. characteristic) are learned with considerable delay, if at all.
3. In English the same words can have many different meanings.
  - a. The deaf child has trouble learning second and third meanings, especially when they are not greatly different but add subtle shadings to the meaning.
  - b. Even when he knows more than one meaning for a word the deaf child has trouble shifting meanings on his own.

4. Idioms and colloquial expressions are, of course, difficult.

B. The structural aspects of language are even more difficult to master when language is being learned visually.

1. Mastering all the morphological rules takes a very long time. Every teacher of the deaf knows the mistakes in morphology that are characteristic for the deaf -- mistakes in verb forms, in plurals, in pronouns, comparison of adjectives, etc.
2. The syntax, or order in which words are used in a sentence, is hard to master, and, again, there are characteristic mistakes, such as in using question forms, distinguishing between subject and object, using modifiers correctly.
3. Function words are few in number but very frequent in occurrence. They have no visualizeable referents (you can't see a "the") and are terribly difficult to learn to use properly. In using prepositions, determiners, conjunctions, auxiliaries and intensifiers, deaf children typically substitute one form for another, omit

the forms completely, or use them when they are unnecessary.

Now let us consider reading. What are the skills that must be mastered in learning to read? To begin with, there is the task of recognizing written symbols. The child must build up a sight vocabulary and he must establish ways of figuring out what the printed words say. After he can do this, he can progress to ever deeper levels of comprehension. He will combine words into ideas; and learn to read beyond the words forming inferences and hypotheses; he will remember what he has read first and integrate its meaning with what he reads next; finally he will learn to criticize and evaluate what he reads in order that he may use reading to enhance his own life.

How does the deaf child fare in his attempt to learn this formidable array of skills? Obviously, the fact that he brings limited language skills to his reading handicaps him considerably. He cannot figure out what words say when he does not know their meanings. He cannot recognize in written form complex language construction if he has not learned to understand such constructions before.

When he is receiving language orally, the deaf child is aided by non-verbal clues (e.g. gestures, facial expressions). Written language offers no non-verbal clues and although written language is not ambiguous as is oral language, the deaf child tends to do the same thing, with both. He



picks out the words he knows, and when he is unable to utilize the structural clues to understand the relationships between these words, he guesses at meanings or resigns himself to getting only partial meanings.

Without going into a discussion of whether the deaf child can learn language directly from reading, I would like to say that in my opinion the deaf child should first learn to read language with which he is already familiar. It is my impression that unless children can master the lexicon and grammar of language, they cannot really progress beyond a third grade reading level. If their understanding of language is adequate, then I think they will make good progress in reading and then they can use reading to further enhance their language.

Added to the complications intrinsic to the learning of language and reading when you are perceiving language visually, are the individual differences which aid or further confound the problem. Each child's abilities and disabilities must be considered in designing a language arts program. The teacher, then, must be knowledgeable in the areas of language, reading, and child development if she is to aid deaf children master the communication skills.

#### Primary Demonstration.

##### I. Language

- A. Association - matching things that go together -- children are shown pictures and asked

to match, e.g. letter, envelope, stamp;  
thimble, thread.

B. Sorting - classifying and generalizing. {

1. Children were given circles, triangles and squares in different sizes and colors and had to sort them in as many different ways as they could think of.
2. They were then asked to sort pictures of food, clothing, toys; and then further sorted foods into -- breakfast foods, desserts, foods I like or dislike, etc.

C. Judgment - children were shown pictures and asked what is needed? e.g. a girl crying, a cat meowing, a boy yawning.

II. Reading

A. Word Reading

1. Which word does not belong in a series - e.g. dress, skirt, blouse, tie, slip.
2. Pictures lotto game.

B. Phrase Reading

1. Matching phrases to pictures - e.g. many boys, many toys, a birthday cake, a birthday present.
2. Draw what's missing - e.g. a big ball and 2 small balls (1 big ball and 1 small ball drawn).

### C. Sentence Reading

1. Directions - e.g. Put your right hand on your head.
2. Make the sentence true - e.g. Grass is white.
3. Charades - e.g. You are watching a funny movie.

### D. Paragraph Reading

1. Riddles
2. Put the sentences in order to tell a story.

### Methods of Promoting Growth In Language and Reading.

I have described the various problems that can assail the deaf child who is learning language visually. Now we should discuss the different methods of trying to get the deaf child to master language both receptively and expressively.

The first time that deaf children were educated, the children of the aristocracy were taught by individual teachers. Then gradually as we had public education the same methods were carried over. From the very start we have had the same dichotomies in methodology that exist today, both so far as oral and manual methods go, and so far as analytic and natural methods go. They are equally ancient or new -- whichever way you want to look at the history of the education of the deaf. In our country the analytic methods that we are most familiar with date back to the middle of the 1800's. The Wing Symbols symbolized parts of the sentence. The Barry Five-Slate system

divided the blackboard into five sections to symbolize parts of the sentence. These methods are not very prevalent and their primary interest to us is historical rather than practical. The Fitzgerald Key is, however, in widespread use. In fact, I think this is the most prevalent system for teaching language for the deaf in most residential schools today. The Fitzgerald Key, as you know, is designed primarily to symbolize the syntax of English, the sequence of the parts of the sentence: who, verb, what, how many, what kind, what color, where and when, are the major key headings. More recently, added to the Key has been the use of color; the same Key headings are used, but we attach a color symbol to the various headings. Related to this is the idea of teaching basic sentence patterns using the Key headings.

What is behind this methodology - what is it trying to accomplish in terms of teaching language to the deaf? Behind these analytic systems is the belief that since the deaf child is perceiving language visually the presentation must be visual. The idea is to take language and break it down systematically and teach deaf children to master it step by step from its simplest component parts to its most complex patterns.

You remember that involved in learning language is mastering the lexicon, the morphology, the syntax, and the use of function words. The analytic methods attack just one of the formal elements of language - and that is syntax. They're

designed to show the ordering of words in English. The Key or the Barry Five-Slate, or the Wing Symbols, will tell you where in the sentence the verb should go, or where the who, or the adjective belongs, but they will not tell you which word form to use. They will not tell you, for example, whether you need "have fallen" or "fell." Usually, allied with any of these analytic methods is a traditional grammatical approach; that is, the teaching of verb inflections and other morphological elements, like pluralization. The analytic device itself doesn't begin to cover the whole gamut and range of the language competencies that the deaf child needs to learn.

The other major approach in teaching language to the deaf child began at the same time that the analytic methods began, and continues in use today, although it is probably not as prevalent as the analytic methods. In the Natural Method, also called Direct Intuitive or Mother's, the emphasis is quite different from the analytic methods. The proponents of the natural method say the deaf child is a child. Despite the fact that he is learning language in a mode that is different from the way a hearing child learns it, his psychological laws of learning are no different. He'll pick up language if he is given the same experiences and the same environmental background that promotes language growth in the hearing child. Naturalists say: don't focus on language and break it down and feed it piecemeal to the deaf child; focus on the child and see what his need for language is.



Provide him with the language he needs at the time he needs it and this will motivate him to use language. The hearing and deaf child learn in the same way, although not at the same rate. Structure the deaf child's situation like the hearing child's and he will master the same skills that the hearing child masters - given time. If we don't teach language analytically to the hearing child why should we do it for the deaf child?

Language is primarily a means not an end. We are so impressed with the language deficit of the deaf child that we forget that language is only a means. The reason we want the deaf child to have language is that we want him to communicate. We want him to make social contacts and we want him to have a vehicle for understanding the thoughts of others and for transmitting his own thoughts. We should be exposing him to ideas instead of to language forms. Whatever language is needed at any particular moment in the child's life should be the language we are teaching him, rather than some step in a language sequence that is not derived from his need to communicate. If the deaf child, like the hearing child, can see the usefulness of language; if language can be made to serve for him the same function it serves for the hearing child: as a tool for getting what he wants, for gaining control over his environment, then he'll begin to absorb language. In the analytic method, the motivation comes from teacher and parent approval, whereas in the natural method it isn't teacher

approval that makes him go on but rather getting what the word yielded up for him.

It is important for the teacher to be conscious of the mechanics of learning language, but the child need only concentrate on his need and the effectiveness of language for his needs. One of the common misconceptions is that the analytic method is structured and the natural method is unstructured. The natural method is not unstructured. What happens in the natural method is that the teacher, with her knowledge of the formal devices of language, and with her knowledge of the development of language in the hearing child, selects for the deaf child the language that is appropriate for his level as well as for the situation in which he finds himself. Always, within a situation, there is a choice of language; the vocabulary, the sentence structure can vary a great deal depending on the interest, the age, the ability of the child. The structure is in the teacher's mind; the visual elements are not put up; there is no key; the teacher helps the child to use the language appropriate to both the situation and his level of language development.

Although we have lagged behind, the ways of teaching language to the deaf have in some ways been related to the ways known and used for teaching language to hearing children. For many years the education of the deaf took place in residential schools which were more or less isolated from the mainstream of education, but today there is a feedback between the institutions where methodology has been originating and

institutions where children are in fact being taught. The most recent trend in the teaching of language has been the linguistic approach. There are many different approaches and theories in linguistics. Descriptive linguistics describes the formal elements of language. I suppose you're all familiar with the terminology of Charles Fries of function words and form classes. Linguistic approaches depart from traditional grammatical approaches, although there are great overlappings. The descriptive linguists are describing how language works, whereas the grammarians are prescribing rules for usage.

The most important recent trend in linguistics has been the one started by Chomsky, called transformational or generative grammar. Chomsky is describing the limited number of rules in a language which allow for an unlimited number and variety of sentences to be produced. Chomsky's terminology stresses kernel sentences, which are expanded and transformed into phrase structures. Transformationalists are interested in determining how the native speaker generates all the rules of his language. How does the child master language? Does he simply use the output of the adults around him as samples for imitation? Recent studies of infant language development seems to indicate that language is learned not just through imitation. What seems more to be true is that given a body of information, from the sampling of adult speech, the hearing child generates the rules of language himself; he actually abstracts the rules. This explains, for example,

why very young children make mistakes like, "I runned." What they have done is to overgeneralize the rule. They have themselves observed that the past tense is formed by adding "ed" to a verb. They have not had experience with several ways of forming past tenses so they overgeneralize the rule and apply it to cases where unfortunately we make exceptions. At certain ages and stages children's syntactic sense of English is different from adult English because they generate their own rules which they continue to refine by absorbing the exceptionalities in the language.

This approach, this studying both of language itself, and also of how the child masters the steps in learning language, may present us with some useful techniques for transmitting to deaf children the structure of language. I am very much concerned about the inability of the deaf child to understand and use the structural elements of language. It puzzles me why it takes so long for a deaf child to respond to the structure and to use it habitually. What is lacking that makes the deaf child unable to grasp the structure? Is it that his sampling is so poor that he cannot generate rules on his own? We may at some time in the future get some answer from linguistics. At the moment I am an interested skeptic. My feeling about linguistic approaches and grammatical approaches is that if you have language then you can learn grammar and you can apply grammatical rules. But I have never seen any demonstration that you can use grammar



to learn language initially. My feeling is that you have to have a basis in language, and then perhaps grammar can help you sort out and straighten out what you already have. I sort of feel that way about linguistics - those who have language already don't need it. Those who don't have language cannot use it because it is too confusing. But, on the other hand, I see possibilities on two levels. One is at the advanced level for children who do have a good basis in language, but who are making characteristic mistakes. Here I think linguistics can help. Secondly, one of the things I look forward to very enthusiastically is the freeing the teacher from providing drill by allowing children to work through programmed materials at their own pace. There is room for posing to children, through programmed language materials, problems that are basically linguistic and having them work out some of the generalizations that are systematic in English.

Actually, it seems to me that teachers of the deaf have been using some of the notions in linguistics for a long time. For example, I think that we have been generating sentences for deaf children and transforming them through group and individual news activities when we do things like transforming "Johnny didn't come to school today" to "Johnny isn't here today." or "Johnny stayed home today." In other words, every time we teach, we give the child a kernel sentence with which to express his idea, and when he knows that particular sentence pattern, we give



him a slightly different pattern for expressing the same idea. We take a simple pattern and give alternate ways of saying the same thing. And then we add to the pattern. We've done this for years in individual news. First we say, "I have a new dress. It is red." Then we generate it into "I have a new red dress." We take the child's spontaneous pivot-open responses and transform and generate them into the phrase and sentence structure of English.

I think we can probably combine natural approaches and linguistic approaches. But I feel very strongly about language as a medium for thought. The thing that appals me is an approach that teaches language through memorization. I don't care as much for a well-formed sentence as I care for a well-formed thought. If his idea is good, I'll help the child clothe that thought. But I think it's terribly important that he have that thought; not just that he produce correct language. My objection to analytic approaches is that they seem to focus more on language than on the purpose of language - the transmission of thought.

We ought to talk a little about remedial techniques that we use with the children who have other problems in addition to being deaf. Do we need a special approach with children with these special kinds of problems? You know, there's something basically the same about language and there is something basically the same about children. And when you're trying to put the two of them together you have to end

up with something that looks the same for all children. It's the same film, but in slow motion. Take the same basic elements, and instead of teaching them as a unified whole, teach one element at a time - visual perceptual skills, memory skills, and specific language skills, from the concrete to the abstract - drilling one form before going on to the next. This is necessary with certain children. My fear with this remedial approach is that it becomes generalized. There are schools where they have adopted this for all of their children. This rather appals me, because I think the normal deaf child can absorb the component skills in a more meaningful context. The isolated activity actually has no purpose for the child. For example, in perceptual training, to find and continue a pattern is the end in itself; whereas in a normal activity - such as making a horse rein - you have to find the perceptual pattern and continue it, but the visual perception is not the end in itself - making something is. With some children it is necessary to break down skills into their component elements before the child tries a task which requires an integration of these component skills. But this should not become the routing procedures with all children.

I did want to say something about different approaches in teaching reading. Basically there are two major approaches. One approach stresses the idea that written language is simply a symbol system for oral language. The teaching of reading is simply teaching the child systematically to recognize

first the regularities and then the irregularities in representing sounds in written form. The assumption is that the child comes to written language with an understanding of oral language. If he could just figure out what the words said he would know what they meant. So all he needs to do is to translate written symbols into oral symbols. These linguistic approaches in teaching reading ignore meaning and concentrate on recognition of written symbols, using nonsense syllables in the beginning. Later, the structural linguists also concentrate on patterns of pitch, stress and juncture, and grammar and syntax.

The other major approach to the teaching of reading emphasizes comprehension, asserting that teaching children to read involves more than mere word recognition. Written language and oral language are not necessarily the same, because oral language is colloquial and uses different forms of expression. Both comprehension and appreciation of written language are taught. This approach stresses the purpose of reading. The teacher must motivate children to read for pleasure and for information. She must teach children to examine not only what the author said, but how he said it, and to criticize and utilize what is read.

I'd like, in the time left, to outline briefly the developmental goals in a school for the deaf. In the pre-school period, that is up until the age of six from whenever you can begin (and, of course, the earlier the better - from

birth preferably, but certainly as soon as you can) what we want is to saturate the child with direct experiences. We are very much aware that the world of a young deaf child is a deprived world, devoid of meaningful sound. We're trying to make sound an important part of the child's activities. We don't concentrate on language itself as such; we don't sit children down and drill them in a list of words. A child taught that way will have a lipreading vocabulary, but from my point of view, he will learn nothing about language. He doesn't learn that language is for communication. Language serves him no purpose and he is motivated only by the approval of the teacher. Instead, why not simply talk to the child about the activity he is engaged in? Use the language that is appropriate to the activity, simple, clear language to fit with his sensory experiences, and with the percepts and concepts the child is forming in his direct play. I am not averse to giving non-verbal clues (gestures, facial expression) to linguistic meaning. What we expect the child to have by the time he is six, is an awareness that language serves a function, that language communicates; we expect him to look to the lips. We expect him to be, not a proficient lip-reader, but a habitual lipreader - to look when people are talking.

At the primary level our goal in terms of language is to establish simple patterning of language to express one's own immediate life experiences. We want the child to be able

to hold a conversation with someone in which he can both understand the other person and can transmit his own ideas, feelings and experiences. The child masters the language of his immediate environment, enabling him to tell what he does, sees, likes, feels, what happens to him at home, in school, at night, in the morning, all day and everywhere. At the pre-school level expressive language is usually at the one-word sentence level. At the primary level you expect that sentence patterning will become habitual. It may not be correct language, there will be structural flaws in the language, but the habit of talking in sentences should be established.

The goal in language at the intermediate level is to develop more correct language, as well as more complex language - language which expresses the personality and gives room to the imagination. It's not enough to know one way to say something; the deaf child must not be limited by the expression of his ideas by a small repertoire of language. Language work at the intermediate level must be stimulating, creative. In terms of reading, the intermediate level is the crucial period. Here is where you will find out whether you will indeed have a reader who's going to go on progressing, or whether you've reached the child's pinnacle. At the intermediate level you are no longer learning to read, but reading to learn, and this involves developing proficiency in a formidable array of skills.



At the advanced level our goals have to discriminate between pupils for whom this is the terminal point, and those who are preparing for higher education. The program in language and reading must be different to meet the needs of each of these groups.

### Advanced Demonstration.

#### I. Language

##### A. Vocabulary

1. Word game - use the last two letters of the definition to form the next word, e.g.  
a bird's home - nest  
something you see in the sky - star  
a curved entranceway - ar--
2. Complete the series e.g. open close male  
female lose find loose

##### B. Connected Language

1. Emotions - pictures of people - identify the emotion and tell what you think may have happened
2. Humor - writing straight captions for a picture of Vice Pres. Humphrey and for a baby picture, and then reversing the captions.

#### II. Reading

##### A. The language factor in reading

1. Structural meanings - phrases and clauses  
for where when why before after

2. Sarcasm

3. Multiple meanings - riddles and jokes

B. Comprehension

1. Directions - trick

2. Reading for information - newspaper story.

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## A MULTI-MEDIA APPROACH IN THE CLASSROOM FOR THE DEAF

Robert J. Schmitt

### Explanation.

This paper is not meant to be a report on a Captioned Films for the Deaf research project, although the multi-media approach to teaching language to deaf children is an important aspect of a Captioned Films funded teacher training and equipment testing program, "Operation Hurdle." The intent of this paper is to provide a description of new equipment and materials used in this approach and further, to present some personal observations concerning new media and their use in the classroom to improve the instruction of deaf children. Hopefully, there will be offered herein some new information which will be of assistance to administrators, supervisors, and teachers who are charged with the enormous responsibility of teaching language to deaf children.

### Background.

The first reported steps taken toward the development of a multi-media approach to teaching in the classrooms for

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the deaf using new media were presented in a paper, "Use of New Media and Techniques in a School for the Deaf", prepared for the 1965 Educational Media Symposium in Lincoln, Nebraska, by Mr. William Jackson, Director of Visual Aids at the Pilot School for the Deaf in Dallas, Texas. The present approach is an expansion of Mr. Jackson's original realization in which overhead projectors were used effectively in conjunction with remote controlled filmstrip projectors in the classroom by experienced teachers of the deaf who had received instruction in the operation of visual aids.

Dr. Marshall Hester, Project Director of the New Mexico Foundation, on a visit to the Pilot School, recognized the vast language teaching potential of the two-projector, two-screen approach, and formulated plans for "the automated classroom for the deaf." Two more remote controlled projectors were added to the equipment plus an electric pointer and a central control box which permits the teacher to use any projector that she desires without having to leave her position of advantage at the side of the overhead projector.

At this point, an assistant project director (an experienced, trained teacher of the deaf) was employed and sent to a summer N.D.E.A. Media Institute at the University of Nebraska to receive instruction in material preparation techniques and the operation and utilization of new media. It has been the responsibility of this educational media specialist to prepare and present demonstrations in which all media

in the automated classroom are coordinated and employed to teach a set of closely related concepts with their appropriate language to groups of deaf children.

Rationale.

The rationale underlying such an undertaking may be stated simply. Deaf children must learn primarily through their vision. Based on discouraging statistics concerning the overall poor academic achievement of school leavers for the past few years, deaf children now in school are going to have to learn a great deal more visually, or in any other way, if they are going to compete successfully in the automated, technically-complex world of employment of today and tomorrow.

The multi-media approach is an attempt:

1. to increase the use and effectiveness of coordinated visual stimuli in the classroom
2. to provide more appropriate vocabulary and language in the same amount of time with the invaluable aid of the overhead projector
3. to use various new media to provide ample, interesting repetitions which are necessary for learning
4. to supply opportunities which permit the deaf child to practice and then use the language.

The multi-media approach in the classroom for the deaf is an attempt to teach more language to children in a



shorter period of time and thereby provide them with more education. Thus, it is now possible with new media literally to bombard each child with a multitude of meaningful visual stimuli on the same topic and provide opportunities for appropriate language to be repeated by the children without boredom until it is mastered. It is hoped that new media will challenge the teacher to do more horizontal or, better still, depth teaching at each level.

Truthfully, the multi-media approach is not one which can be employed regularly in your classroom at the present time due to the scarcity of suitable materials on any one subject. It is all but impossible to find a captioned film, an 8 millimeter cartridge film, a filmstrip, and commercially prepared transparencies on more than a few subjects suitable for instruction in a lower or middle school classroom for the deaf. Relief of the material shortage is on the way. A materials production center specifically set up for reproducing and distributing transparencies, films, still pictures, and other teaching tools designed for the deaf is already a reality at the University of Nebraska. In addition to this, Captioned Films will make available one hundred fifty new titles in its educational film series during the current year.

#### Equipment.

An overhead projector: This piece of equipment is the least complex in mechanical construction and operation of any projection equipment found in the automated classroom. In selecting an overhead projector for a class of deaf children, check for the following:

1. The overhead should be simple to operate. A three-position switch is desirable; one position for "Off", a second for "Fan Only", and a third for "Lamp Plus Fan". As with most projection equipment, running the fan on the overhead for a short time after the lamp has been turned off will lengthen the life of the lamp.
2. The projector should be light weight for easy portability.
3. The projector should have an efficient cooling system-- a fan, but it must be quiet. Some projectors are quite undesirable because of a loud fan hum which is picked up and amplified by individual or group aids.
4. The overhead should be capable of producing a bright, clear image on a screen in a fully lighted room. This is one of the main assets of a projector as far as its use with the deaf is concerned.
5. The overhead should have a means of elevation so that its projected image can be raised high enough over the head of the teacher that all of it can be seen by all members of the class. This is accomplished better with a projector that has a head which tilts rather than front legs which raise and thereby tilt the entire projector including its writing surface.
6. Of major importance, any overhead put into a classroom for the deaf must have a provision on it for the attachment of an acetate roll.

An 8 millimeter cartridge projector: At the present time, only one company produces the cartridge projector. The rear projection model, which resembles a portable television set, is excellent for classroom viewing as its picture is large enough to be seen by a class of eight or ten children and its image is bright enough to be viewed without having to darken the room. This piece of equipment was not designed for large group viewing. Because of its ease of operation, the 8 millimeter cartridge projector is ideal for self-instruction programs in the classroom or in the dormitory.

This projector is also available with a still-framing control which not only permits stopping the film at any point with the lamp lit, but also enables the person controlling the projector to advance the film one frame at a time so that any sequence may be slowed down for more careful viewing.

A 16 millimeter sound film projector: The two things essential in a 16 millimeter projector for use with deaf children are a remote control box which permits the teacher to control the projection of a film from the front of the classroom, and a still-framing device which permits stopping the film with the lamp on and the shutter open at any time without damaging the film. At the present time there is only one projector available which incorporates both of these features.

A filmstrip projector: The prime requisite of a filmstrip projector is again a remote control attachment. Also of importance are the size and weight of the projector. A small, light-weight

projector that is easy to handle, easy to use, and easy to store will be used more often than one that is large, bulky, and awkward to operate. There are many good filmstrip projectors available that include adaptors which permit manual projection of slides. This combination projector is outdated as far as the automated classroom is concerned.

For the effective use of slides as a teaching media, every school should have a remote controlled slide projector whose trays, which hold up to eighty slides, can be filled with whatever pictures are necessary in whatever order the teacher desires them.

Projection tables: Three tables are required in the multi-media demonstration. All three tables are on wheels. All three tables have a wheel locking device. A sixteen-inch high projector cart makes an ideal base for the overhead projector. This size cart puts the stage of the overhead at a comfortable writing height when the teacher is seated beside it. Furthermore, if the teacher sits forward and close enough to the overhead, with the acetate roll extending slightly over her lap, the light from the stage of the projector adds extra illumination to her face. This additional light has been described by several deaf adults as "beneficial" to lipreading. The table for the 8 millimeter unit should be about thirty inches tall. The projection table for the 16 millimeter and filmstrip projectors should be about 42 inches high.



One commercial projection screen: Either a 50 x 50 inch tilting type screen or a 50 x 50 wall screen mounted on brackets which extend out from the wall about 14 inches will suffice. For the pull down screen, provision should be made for attaching the handle of the screen to the inside edge of the chalkboard ledge at the base of the chalkboard. A small cup hook and length of thin chain will suffice. The screen on which the overhead is projected must be tilted so that the beam of light striking it hits it at a ninety degree angle or there will be a noticeable key-stoning of the image.

A second projection screen: A 30 x 30 inch screen can be made inexpensively from 1/4" tempered masonite covered with two coats of high quality, flat, white latex paint. A stable base, 12 x 16 inches, can be made of 3/4" plywood with the screen supported between two wooden blocks (10 x 1 1/2 x 2) attached to the base board. The screen will fit on top of the 8 millimeter projection unit.

A master control box: This box contains enough electrical outlets to plug in all the equipment needed. A switch for each plug activates or deactivates any piece of equipment. The equipment remote control buttons are then used to regulate the rate of the presentation of material. A new control box is being built which will include relay switches which will lower the classroom lights whenever any projector is turned on other than the overhead.

#### Materials

A captioned film.



An 8 millimeter cartridge film: Cartridge films are often referred to as single concept films, because their brevity permits coverage of only a small amount of material. These films, about 2,000 of which are available on the commercial market, usually run three to four minutes. Cartridge films are available in color as well as black and white. They are silent and for the most part are without titles. None of the commercially available films were made specifically for the deaf, except a series on fingerspelling produced with Vocational Rehabilitation funds.

A filmstrip.

Commercially prepared transparencies.

Handmade transparencies: The teacher may create her own transparencies either by hand or with the aid of the heat process copier. These transparencies provide opportunities for interesting repetition of vocabulary and language and finally are used to encourage individual expression of language by the children.

Marking pens: Pens used for writing on the acetate roll on the overhead projector contain water-based ink so that marks can be easily removed from the roll with a damp cloth when they are no longer needed.

Suggestions to Teachers Concerning New Media

The overhead projector: The overhead projector is the most important new piece of electronic teaching equipment to enter classrooms for the deaf since the hearing aid.

1. The overhead replaces the blackboard in the classroom for the deaf. Now constant supervision of the class can be maintained while the teacher is writing, thus eliminating class disruptions which frequently occur when the teacher's back is toward the class.

2. The overhead permits immediate confirmation or clarification in writing of lipreading or fingerspelling when a child has not understood.

3. Use of the overhead permits faster children to share answers and contributions with slower members of the class without time being spent in writing answers on the chalkboard. Individual acetate sheets can be kept at each child's desk. A sentence written on the sheet with a crayon becomes an "instant" transparency.

4. The overhead projector is an excellent attention-getting and attention-maintenance device. By controlling the light either with the off and on switch or simply with a piece of paper placed over the lighted stage, attention can be re-focused immediately on the teacher after the projected material has been read. Caution must be used so that children are not required to look at the teacher and the screen at the same time. Follow the procedure of talking and/or spelling and then writing or showing.

5. The acetate roll provides relief from the frustration of classrooms with not enough blackboard space for the storage of written information. Often called "the moving chalkboard", the

acetate roll makes available fifty feet of writing surface. Think of this space in terms of re-reading and summarizing what has been covered at the end of a lesson or as a source for review before new material is added.

6. Of even greater importance, the light from the stage of the overhead on the face of the teacher permits her to communicate orally with deaf children when the room is dark during the showing of a film.

#### The 16 millimeter film.

Teachers often ask the best way to show a 16 millimeter film to deaf children. Many people feel that it should be shown all the way through for the sake of continuity. Others believe that it should be stopped periodically and summarized by the teacher to make sure that all of the children are understanding it. There is no one best way to show a film.

1. An uncaptioned film can be used for excellent reading practice by writing out the story on a series of transparencies and having the children pre-read what they are going to see. The story should be written in language and vocabulary that are right for the class; however, a few new unexplained words and even a new language principle may be included. Show the film in its entirety. Then show the film a second time stopping it at critical points to let the children match action with sentences, or discover themselves through visual stimuli the meaning of a new adjective, verby, or idiomatic language construction. Still framing a motion picture adds thousands of teaching pictures to the teaching resources of the school.

2. If a film is used to reinforce pre-taught vocabulary, stop the film and have the children identify objects and sequences to show that they have understood what has been taught.

3. Do not overlook films as a way of continuing essential work in sequence with older children. Steps in a process shown on the screen can be written up on strips of acetate and presented in mixed-up order on the overhead. The boys and girls can select them in the right order as a check for understanding or as an immediate recall device. Once the correct sequence has been established in reading from the visual source, the sequence can be rewritten on the overhead in the language of the children.

4. In the projection of a science film or any film which has opportunities for drawing conclusions in it, stop the film and encourage the children to draw their own conclusions before seeing them on the screen. Have the children write their conclusions on acetate sheets and hand them in for correction immediately after the correct answer is known.

#### The 8 Millimeter Cartridge Film .

Any person who has an 8 millimeter movie camera and shoots 50 feet of film can have it put into a plastic cartridge for a small fee so that it can be projected in an 8 millimeter loop film projector. There are unlimited possibilities for shooting class field trips, school projects, and events in 8 millimeter film and then using the films again and again to reinforce language.



### Filmstrips.

The use of the overhead in conjunction with any filmstrip makes the strip suitable "language-wise" if it is suitable "concept-wise." A teacher can write her own titles on transparencies and coordinate the two media. Exposure to the more advanced language is incidental, but in many instances, opportunities occur in which synonyms or parallel language constructions are easily taught.

### Conclusion.

The multi-media approach is not a quick and easy solution to the problems of teaching the deaf. Effective use of the multi-media approach requires:

1. New media projection equipment readily available in every classroom.
2. Superior teachers of the deaf who must be trained in the preparation of materials for and the utilization of new educational media.
3. An increased supply of iconographic materials suitable for younger deaf children which can be incorporated into the preparation and presentation of language-centered experiences.

No longer is it suggested that a teacher preview a film or filmstrip before she uses it. This is now a requirement, as every bit of visual material used in a lesson should help to develop an understanding of the concept being taught. If only three minutes of a film concern the topic, those three minutes and not the entire film should be shown.



The automated classroom and the multi-media approach make every room in the school a visual aids room and every teacher of the deaf an educational media specialist in charge of her own center. Sturdy equipment that is operated easily by a teacher trained in its use will increase the number of visual stimuli used in the classroom and make every use of projected material the vital, language-centered experience that it must be.

## TRANSPARENCIES FOR TEACHING DEAF CHILDREN

Robert J. Schmitt

Before discussing the use of transparencies specifically designed for teaching deaf children, it is necessary to mention and discuss certain general principles which must be understood before a transparency can be made.

First of all, any material to be shown on an overhead projector must be transparent. This rules out the projection of pictures or text from a book, a mounted or unmounted still picture, or a page removed from a workbook unless the information first has been transferred to an acetate sheet by one of several methods. The overhead projector does not project pages of opaque materials and care should be taken not to confuse the overhead with the opaque projector--a far less versatile and far less effective projection device.

A transparency is actually a large acetate slide, about 8x10 inches which may be made in black and white or color, placed on the stage of an overhead, and projected on a screen. Unlike a 2x2 35 millimeter film slide, an acetate transparency is large enough and substantial enough to be written on.

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Its cardboard frame offers anchoring space for overlays which are additional sheets of acetate mounted by hinges on the front of the transparency frame. Overlays supply further details and/or additional information which promote understanding and learning.

#### Processes for Making Transparencies

The least expensive method of producing transparencies is the handmade method. Reprocessed x-ray film ( $8\frac{1}{2} \times 11$ ") is available in large quantity lots for about two and a half cents a sheet. This acetate readily accepts India ink, grease pencil, and marking pens with permanent and temporary inks. It is recommended that all ideas be tried out on handmade transparencies first, as even the best idea often needs revision after it has been tested with children. After layout, content and effectiveness of use have been checked, the transparency may be redone on longer lasting materials. Reprocessed x-ray sheets may be cleaned and reused. (See Suggestions to Teachers.) The procedure for making a handmade transparency is not a difficult one. First, sketch the content of the transparency on a sheet of plain white paper, making sure that all information will fit inside of the frame in which the transparency will be mounted. Then tape a sheet of acetate over the drawing and trace it with a thin line permanent marker or a pen and India ink. Mount the transparency on the back of a cardboard frame with  $\frac{3}{4}$ " masking tape. Tape down all four sides of the transparency securely.

The heat process office copier makes professional looking transparencies which are long lasting but considerably more expensive than those made by hand. An original may be prepared on any paper that has a smooth finish. Pictures, lines, and words which are to be reproduced must be drawn, written, or typed with a carbon based ink or lead. Ball point pens, dittoed material, red typewriter ribbons, and colored inks on a printed page will not reproduce on a heat process machine. Black India ink, black printer's ink, and a soft lead pencil reproduce well. The cheapest transparency produced by the heat process copier costs twelve and a half cents. Heat transparencies are permanent as the machine burns into the acetate the carbon image of the original. Reprocessed x-ray film cannot be used to make heat process transparencies. Companies which sell heat copiers have available various types of acetate film which can be used on all machines. There is much variety in the materials available as to background texture, color, and weight of the acetate sheet. Costs range from twelve and a half cents a sheet to thirty-five cents a sheet and acetate sheets are usually available only in boxes of 100 sheets or more.

A third process available for making transparencies is the color lift method. The best method of color lifting employs a dry mount press and special sheets of heavy acetate which cost about thirty-five cents a sheet. This process enables a teacher to make a transparency out of any good magazine picture that she finds, providing that the magazine has clay

coated pages in it. Test the selected picture for clay by rubbing a dampened finger gently in a circular motion over an unprinted white area of the page. A white deposit on the finger indicates the presence of clay. Teachers often ask, "What is left on the magazine page after the color lift transparency has been made?" The page is absolutely blank. The ink from the page has been sealed into the acetate film. The back of the transparency is sprayed with a plastic coat to further seal in the ink, so that color lifts last indefinitely. A less effective but cheaper method of color lifting is also possible on the heat process office copier.

A fourth method of transparency production is one which is often used in professional production centers but is rarely used in schools due to the time involved in preparing the masters. The diazo process produces transparencies of excellent color and line, but the initial cost of the equipment, the upkeep, and the cost of materials are prohibitive to most small schools. Diazo transparencies are permanent and quite sturdy.

### Lettering Transparencies

The most important thing to remember about lettering on a transparency concerns size. For classroom use, lettering should never be smaller than 1/4". This means that material typed on a pica or elite typewriter is unsuitable for reproduction and projection. All masters prepared with typed lettering should be done on a primary typewriter. Use the



same size standard for hand printing or hand lettering with any of the numerous letter stencil guides available commercially. One other available type of lettering is particularly suitable for transparencies. This is the pressure sensitive letter. Inexpensive sheets of letters containing a multitude of capitals, lower case letters, and numerals are available in 1/4" and larger sizes. These letters are easily applied by placing the lettering sheet over an acetate one and transferring a letter from one to the other by rubbing gently with a smooth object such as a ball point pen cover.

#### Adding Color to Transparencies

The importance of color in clarifying, emphasizing and holding attention must not be underestimated. There are three inexpensive means of adding color to transparencies.

Felt pens (permanent or water based) may be used to add color. Broad pointed pens are preferred for this purpose. Felt pen inks are transparent so that overlapping strokes do show. Care should be taken to color in one direction and to avoid overlapping as much as possible.

Waxed based pencil leads are available which project in brilliant color. These colors are only temporary, however, and will rub off and fade as the transparency is reused.

Thin sheets of colored mylar adhesive are available for adding professional looking color to transparencies. Pieces from the colored adhesive sheets are cut to size and shape

with a razor blade and are applied to the back of the transparency so that they are not disturbed when the transparency is written on or erased.

#### Commercial Transparencies

Commercial transparencies are available in two forms. Sets of transparency masters, usually twenty or more to a set, on many academic and vocational topics are available for one dollar per set. A transparency master is merely a printed drawing on a sheet of white paper. In order to change a master into a transparency it must be run through a heat copier with a sheet of heat sensitive acetate or traced by hand on x-ray film.

Sets of ready made transparencies are available at a much higher cost. One mounted base transparency sells for \$1.25 or \$1.50. Each overlay adds about one dollar to the cost, so that a transparency with three overlays usually costs about \$4.50.

There is nothing available at the present time in prepared transparencies or in transparency master form that has been prepared specifically for teaching language to deaf children. Many sets of transparencies or masters contain individual items which can be used successfully, however. A very handy item to have in any school for the deaf is the Buyer's Guide, Visual Packets which reproduces in small illustrations the contents of every packet of transparency masters available from the 3M Company. The use of this guide saves money and the valuable time which is involved in going through each set of transparencies looking for items to be reproduced for teaching the deaf.

### Classroom Use of the Overhead Projector

Teachers of the deaf readily accept the overhead as a replacement for their classroom chalkboard, but use as a chalkboard substitute is only one of the important roles that the overhead can play in a classroom for the deaf.

Reviewing briefly, it has been pointed out that in the hands of a skillful teacher the overhead is:

1. An attention getting device
2. An Attention holding device
3. A lesson pacing device
4. A valuable teaching tool whose use encourages constant supervision of children in the class
5. A teaching medium which provides written confirmation of spoken or fingerspelled communication

These functions have been noted in the literature and demonstrated many times and with the exception of point 5, the values of the projector are the same for any class of children--with or without hearing. Let us turn now to use of the overhead with deaf children and particularly its use in two areas--the development of concepts and the development of language skills.

### Transparencies for Subject Areas

#### Language

Composition work is a necessity, thus correction of compositions becomes a "necessary" evil. Many teachers of the deaf dread Monday morning, the traditional "letter home" or

"week-end news" correction day. Here is the procedure in classrooms all around the country. Twenty minutes are spent copying news or letters on the board or rewriting them on the board from memory. Unfortunately, there is usually room for only five compositions and there are eight to ten students in the class. Ten minutes are spent on the correction of each composition which leaves one on the board uncorrected. There is no chance of saving it for the next day because the board space will be needed for other lessons during the day. Six compositions remain to be corrected with the children and unless they are corrected, composition has descended to useless busy work in the classroom.

Try, instead, one of these three new approaches to composition work on the overhead projector.

Approach 1. The Light Board is a 3M product which is designed for use with overhead projectors. In appearance it resembles the old fashioned magic slate which many children have and use at home. A suggested use for the Light Board in conjunction with composition work for the deaf follows. Let each child take a Light Board home with him. When he writes his news or letter have him write it in ball point pen or pencil on a regular sheet of lined paper which is on top of the Light Board so that the pressure of the pen or pencil makes a duplicate copy of the theme simultaneously on the cellophane sheets. When the composition is turned in, the paper copy goes on the teacher's desk and the Light Board goes directly onto the overhead for projection. There is no intermediate step of rewriting the work



on the board. Correct the Light Board copy of the paper with the other members of the class in the usual manner. Make corrections by writing on the Light Board with a metal stylus or the plastic cover of a ball point pen. Ball point pen ink or pencil lead will ruin the Light Board. Make sure the author of the theme understands all corrections. Then separate the two sheets of film and erase the theme and corrections. At the end of the period return the original paper to the child and have him make the corrections. After the first experience, the amount of attention the children pay to corrections increases. The twenty minutes of blackboard writing time are spent in the correction of additional compositions. Not as much material can be written at one time on a Light Board, but its use provides more classroom correction time which is badly needed.

Approach 2. A cheaper method of coordinating composition work and the overhead projector is to give to each child a sheet of reprocessed x-ray film and a grease pencil or a water based felt tipped pen. Compositions are written directly on the acetate sheet. Placing the sheet on top of a piece of lined notebook paper gives the pupil some guidance in spacing, letter height, etc. When the child brings in his composition it goes under the acetate roll on the overhead and corrections are made with a different colored pen or pencil. After all of the corrections have been made, they can be wound into the roll and the original returned to the student to be corrected at home. Reference can be made to suggested changes by rewinding the roll and projecting the original corrections on the screen. Water based



pen lines are easily erased with a damp cloth or in case of a small correction, a damp swab stick. Again, the rewriting on the board is eliminated and the original returns to the writer unchanged.

Approach 3. The most expensive approach to composition and the overhead is the use of the heat process office copier to make a copy of a child's pencil written theme and immediately project it for correction. A heat transparency is a permanent thing; it may not be erased or reused. Again, corrections may be made with the transparency under the acetate roll, but they can be made directly on the transparency itself and then erased without disturbing the original. Over a long period of time, daily reproduction of ten papers would become quite expensive. It is suggested that heat transparency copies of student work be made periodically, particularly of themes which contain errors familiar to many children in the class. A permanent copy of a child's work encourages better handwriting, better spelling, and more attention to all of the intricacies of the English language which our deaf children must remember.

#### Preposition Work

Take a simple base transparency like a line drawing of a chair and add three overlay strips which contain the same object, a ball, in three different colors. In which ways can this be used?

1. To review the already presented "Where" words:

"on", "under", "in front of", "by", "near"

2. To give opportunity for the child to use double prepositional phrases such as, "on the floor under the chair."
3. To add adjective color modifiers to simple sentences which contain prepositional phrases

As the number of prepositions increases so may the difficulty of the sentences including the preposition. A single transparency base may be made with one object such as a desk or table. On another frame six or eight well-known nouns may be keyed to superimpose the base transparency in various positions so that the teacher can reinforce compound subjects, subjects in series, etc.

The cup and saucer are on the table.

The knife, fork, and spoon are on the table.

The scissors are on the floor near the table.

Continuing with "Where" work, one of the most difficult things for a deaf child to remember is which place requires "to", which requires "to the" and which requires no preposition after the verb "to go." This is the "go to downtown" error made frequently by deaf children. A transparency with a car in the background and assorted family members on overlay sheets is useful for providing practice on this language construction. Small pictures of the destination placed in the corner of the transparency provide further visual stimulation.

Mr. \_\_\_\_\_ goes to work in the car every morning.

Mother and Jane go to the beauty parlor in the car every Saturday afternoon.

Father and Tim go bowling on Thursday afternoons.

Notice the "bonus" drill on the habitual present tense.

Continuing further with prepositions in sequence story work, a transparency of a girl standing behind an empty table provides work on table setting plus key sequence words, "first", "then", "last". Prepositions "on," "to the left of," "on the right side," "in the center," may be used. All of the items to be placed on the table are pre-drawn on overlays. In addition to providing opportunities for language drill, such a transparency can be used as a basis for composition work using either the past tense or the imperative to provide practice in the giving of directions.

#### Conversational and Colloquial Language

One last area which bears mention is the use of transparencies for teaching conversational and colloquial language. Situations familiar to children at the age of the children in the classroom may be duplicated in picture form on the overhead and responses elicited from each child in the class. For instance, take a transparency of a child receiving a present. What would a hearing child say? "Is this for me?" "It's heavy!" "I wonder what is in it." "I'm so excited." "Thank you. You are so thoughtful." A deaf child might say, "Thank you." It is our job as teachers to make deaf children aware of the language that their hearing peers are using and help them use it appropriately. If there are eight children in the class, eight

different answers should be given. By placing the transparency under the roll, each answer may be written in the conversation bubble above the child's head and then stored in the roll for rereading, expansion, discussion and evaluation by the children.

### Reading

One of the greatest problems which confront teachers who must teach the first grade reader to a group of deaf children, is the obstacle of teaching young children to understand the direct discourse used throughout the book. One approach to solving this problem was developed at the Arizona School for the Deaf as an outgrowth of "Operation Hurdle." A series of transparencies was started which would reproduce all of the characters in the book in illustrations enlarged from the pages of the reader. The transparencies were to include samples of all forms of discourse used in the reader such as:

"\_\_\_\_\_, " said \_\_\_\_.

\_\_\_\_\_ said, "\_\_\_\_\_."

"\_\_\_\_\_, " said \_\_\_\_\_. "\_\_\_\_\_." etc.

The technique for use follows: Show the illustration in the book and then put the transparency on the screen to establish that they are the same. Have the children name the characters shown and establish the locale. Drop the first overlay on the base transparency. On this overlay are verbal language bubbles (comic strip fashion) which contain dialogue from the story. Have children come up and enact what is happening in

the transparency. Have them repeat word for word the dialogue in their bubble. An empty bubble is used to indicate that the character is making no response even though he may be addressed directly. Remove overlay one and drop overlay two. The second overlay contains the same dialogue exactly as it appears on the page of the reader, meaning that it includes punctuation and acknowledgments of the quotes. Have the children dramatize the scene again and repeat the dialogue. If a child says, "said Tom", go back to overlay one and point out that these words were not in the bubble.

Although a series of ten transparencies had been planned, only four were made as understanding of direct discourse had been established after the first four transparencies were used. Two weeks of teaching time had elapsed. As further problems arose, the teacher and children returned to the four examples for clarification and review.

Extending the use of the situation transparency designed as part of the reading program to a slightly more advanced level, the same medium may be used to teach colloquial expressions, particularly in those instances where an empty bubble exists. Much fun can be had teaching, "See you later, alligator!" and other expressions on which deaf children seem to thrive.

#### Arithmetic Reasoning

Closely associated with the teaching of reading to the deaf is the teaching of word problems in arithmetic. Working



on the assumption that the deaf child needs many early experiences in which language is visualized, a new approach to word problems is suggested in the use of transparencies with overlays. Each sheet contains an idea and an appropriate visualization. As a new sentence is added the visualization is altered accordingly. Thus, Tom may be shown with five pieces of candy on a base transparency. As the overlay reveals the new information that he ate three of them, three pieces of candy should disappear. At this point, the language oriented teacher might wish to stop and spend time teaching the language involved in asking and writing arithmetical questions. Otherwise the question itself follows on another overlay, with an indication of the correct answer.

A definite need exists for talented, creative teachers to sit down and make transparency master sets of sample visualized language problems on all of the arithmetic vocabulary found in the second and third grade books so that each teacher will have on hand a visualized story problem sample of an "in all" problem, a "were left" problem, etc.

### Social Studies

The transparency offers an excellent medium for stimulating a child's thinking. Sequence work is well shown on the overhead with the hinged door disclosure technique. Also conducive to thinking is vocabulary work which starts with simple definitions on one overlay and generalizations which require

immediate application of information received on another. Identifying problems, testing solutions, and predicting logical outcomes may be clearly demonstrated with the overhead. Experiences in all of these areas must be provided in abundance for the young deaf child in the hope that they will help to develop at an earlier age the child's ability to generalize and deal with abstract concepts.

#### Giving and Following Directions

In most classrooms deaf children are "imperativized" to death with few opportunities for getting back at the teacher, consequently many deaf teenagers and adults are at a loss when it comes to giving directions. A transparency of the school plant, a super-market floor plan, or of a well-known neighborhood area permits classroom practice work on at least one form of giving directions--telling someone how to get to a certain place.

#### Calendar Work

A great deal of time at the primary level is spent developing the concept of the calendar and the time elements involved. Rather than make a large tagboard calendar every month, make a transparency of the calendar form and use it with the children daily for the recording of news in its many aspects. On a transparency there is no need to scratch out future tense verbs and replace them with verbs in the past tense. After an event, the entire sentence can be erased and rewritten. On an

overlay sheet the category words which go with the calendar should be written so that the children can be exposed daily to these words. At the end of the month the calendar information is erased with one wipe and the teacher is ready to begin again.

### Tips to Teachers

#### Marking Pens and Pencils

Never write on the acetate roll with a permanent marking pen. Permanent pens are strictly for use on acetate sheets. Water based pens or waxed lead pencils are best used on the acetate roll as both are erased easily.

Before buying a set of water based ink pens to use on your overhead, buy just one pen, preferably black, and take it to school and try it on the acetate roll with the lamp on. Many pens contain ink which fades or beads when it is exposed to the heat of the projector. Don't waste money on yellow, orange or brown pens with temporary inks. These colors do not project with enough brilliance to be seen.

#### Cleaning Acetate Sheets

Water based inks may be erased with a wet cloth. If you do not have a sink in your classroom, it is convenient to have on your overhead table a small, wide topped can to be used as a depository for your cleaning rag. During the day a cloth dries out completely several times if it is not kept damp in some sort of container.

Waxed lead pencils are usually easy to brush off with a dry cloth or tissue but at times a grease pencil smudges and leaves a residue of color. Try removing waxed lead pencil or grease pencil marks with a regular chalkboard eraser that contains some chalk dust. The dust acts as an abrasive and removes the marks immediately.

Marks made by permanent pens are not permanent. They cannot be removed with water, but a cloth dampened in ditto fluid, alcohol, or lighter fluid erases any indelible ink.

#### Preparation of Transparencies

Acetate sheets (reprocessed x-ray film) may be taken home and lessons prepared in advance for classroom work. If all individual sheets without overlays are placed under the acetate roll when used, even the material prepared with temporary inks may be used more than once.

#### Adding Color with Permanent Pens

When adding color with permanent pens a problem exists. Even though the black outline surrounding an area to be filled in with another color is dry, the addition of the second color will smear the black and intermix the two colors. This can be avoided if the second color is filled in on the reverse side of the acetate sheet.

#### Source for Reprocessed X-ray Film

Johnson Plastics, Inc.  
524-534 Pine Street  
(P. O. Box 73)  
Elizabeth, New Jersey 07206

Order: 1000 sheets, .0075 gauge,  $8\frac{1}{2} \times 11$ " transparent tri-acetate sheets (clear or blue tint) for \$25.00.

#### Source of Transparency Frames

If a transparency is worth using more than once, it is worth framing. Framing preserves the transparency and makes it easier to handle and file. Commercial frames sell for five or ten cents each.

A school for the deaf that has a print shop can make its own frames for less than three cents each. A local commercial printing shop can produce a permanent cutting die for less than \$10.00. The die is used for cutting out the center portion of the frame. Six ply railroad board, clay coated on one side is good enough cardboard for transparency frames. Railroad board is available in  $22\frac{1}{4} \times 28\frac{1}{4}$ " sheets. The cut out center portion is a bonus well suited for picture mounting.

#### Conclusion

The act of putting transparencies on the overhead projector will not make a good teacher out of a poor one as an untested transparency without a specific teaching purpose is valueless. The extent to which transparencies may aid in the teaching of language, reading, arithmetic, reasoning, and social studies has been suggested in this presentation. The effectiveness of transparencies in teaching the deaf is limited only by the creativity, imagination, and skill of the classroom teacher. The intelligent use of transparencies can change a good teacher into an excellent one.



New media hardware is now in the classroom or just outside the door. As experienced teachers of the deaf we are charged with the responsibility of developing media-oriented teaching techniques and materials with which we can give our deaf children the efficient, effective instructional program that they deserve.

## Session II

### "Factors Contributing to Language Development"

Audrey A. Simmons, Ed.D.  
Director of Aural Rehabilitation  
Central Institute for the Deaf  
St. Louis, Missouri

### "Language Linguistics for the Hearing Impaired"

Audrey A. Simmons, Ed.D.

### "How to Reach the Disadvantaged"

Ralph Guzman, Ph.D.  
Director of Mexican-American Study Project  
Graduate School of Business Administration  
University of California at Los Angeles

### "The Task and the Teacher"

Ross Hancock, M.A.  
Office of Urban Affairs  
Los Angeles City Schools

### "Correlating Reading and Language Instructions"

Bessie Pugh, M.A.  
Greeley, Colorado

### "Teaching Speech in the Classroom and at Home"

Donald Calvert, Ph.D.  
Executive Director  
San Francisco Hearing and Speech Center

### "Educational Media, Methods, and Curriculum"

Harriet Green Kopp, Ph.D.  
Principal  
Detroit Day School for the Deaf  
Detroit, Michigan  
(Oral presentation and demonstration; no paper submitted)

## FACTORS CONTRIBUTING TO LANGUAGE DEVELOPMENT

- I. Development, including language, is a process of acquiring increasingly complex concepts, perceptions, and cognitive patterns through the cumulative interaction of the growing child with his environment and his experiences.

F. Mussen, The Psychological Development of a Child.

- 1.1 There is today a growing awareness of the importance of the early years as a foundation, if not critical, period for the establishment of basic learning sets and cognitive styles. There is also a widening of interest in the longterm, emergent and developmental character of complex thought processes. W. Fowler, "Concept Learning in Early Childhood," in Teaching the Disadvantaged Child.
- 1.2 Although he describes stages to which he attaches chronological periods Peaget, nevertheless believes that intelligence develops, not by virtue of maturation alone, nor by learning alone, but as a result of the interaction of the child and his environment. As the child performs upon objects or events in the

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environment, he develops notions of time, space, matter and causality. J. Piaget, The Psychology of Intelligence.

1.2.1 Many children bear the scars of understimulation in their early years. Many rarely have help to name the things they see and feel, to recognize similarities and differences, to classify and categorize perceptions, to learn the word for the object and the phrases through which to express an idea or feeling. M. Deutsch, The Disadvantaged Child and the Learning Process.

1.2.1.1 Awareness of difference precedes awareness of likeness not because differences lead to malfunctioning, but because awareness of similarity requires a more advanced structure of generalization and conceptualization than awareness of dissimilarity. L. Vigotsky, Thought and Language.

1.2.2. Evidence which has accumulated points more and more to the influence of background variables on the patterns of language and cognitive development of the child, and the subsequent diffusion of the effects of such patterns into all areas of the child's academic and

psychological performance. E. Ponder and L. Schneider, "A Conceptual Model" in Preparing Teachers of Disadvantaged Young Children.

1.2.2.1 With a minimum range of stimulation and of opportunity to manipulate objects or to experiment with them in an orderly manner there is a restriction in the range of the variety of input which in turn limits the output in expression and reduces precision and the ability to perceive relationships or other abstract qualities. M. Deutsch, op. cit.

1.2.2.2 The lack of mediation, in addition, reduces the opportunities to link experiences with interpretation of it, i.e. with the ability to convert objects and events to verbal symbols, to explore causal relationships, and to form abstractions. H. Taba, "Cultural Deprivation as a Factor in School Learning," Merrill-Palmer Quarterly, April, 1964.

1.2.3. Favorable environmental conditions promote the development of cognition and unstimulating circumstances retard it. M. Hunt, Intelligence and Experience.

1.3 The greater the variety of stimulation and the number of situations which challenge modification of conceptualization,



the more mobile and differentiated the mental structure becomes. In other words, the more the child sees, hears, and interprets, or is being helped to interpret, the more likely he will want to see and hear and the more he will get from what he sees and hears. The greater the variety of reality situations with which the child has coped, the greater his ability to cope. C. Stendler, Readings in Child Behavior and Development.

1.3.1 Many children from socially deprived environments enter formal learning situations with poorly developed coping mechanisms and underdeveloped abilities in some of the crucial areas underlying learning. These areas include language, attentional focusing, auditory discrimination and the like. Such children also tend to have low motivation, with no expectation of reward from learning. Preparing Teachers of Disadvantaged Young Children.

1.4 Recently the possibility has been suggested that early stimulation may be crucial in laying the foundation for the capacity to process information. If this should be true, early stimulus deprivation may create a lifelong handicap in response capacity and in the assimilating and manipulating of facts and ideas. J. Hunt, Intelligence and Experience.

2. An accumulation of evidence from several fields gives support to the concept that sensory deprivation early in life causes impairment in the child's later functioning which may be permanent. D. Hebb, Organization of Behavior.

2.1 Early learning takes place through the senses. If an infant is to learn from the environment, he must "notice" its salient characteristics; that is, he must be able to see, hear, smell, touch, and feel. The infant's experiences of reality is at first global and undifferentiated and develops from the general and diffuse to the specific and precise, by a series of differentiations followed by reorganizations and functional subordinations.

L. Stone and J. Church in Reading in the Psychology of Human Growth and Development (ed) Daller.

2.1.1 Implications especially pertinent to auditory learning see Auditory Training Outlines, A. Simmons.

2.2. Investigators have assessed a large number of parameters associated with the effects of reduced sensory input on cognition, perceptual and physiological processes. A. Riesen, "Stimulation as a Requirement for Growth and Function in Behavioral Development" in Function of Varied Experience.

2.3. If the deaf child is left by himself there is no adaptation to the world around of the speech sounds,

and, therefore, no extensive training of all possible phonemic combinations prior to their symbolic usage as words. Consequently there is no single word phase, no morphological and syntactical refinement; in short: no language learning. And, therefore, and consequently there is no subtle and effective control of the environment, no highly sophisticated system of symbolic references, and no totally satisfactory interhuman emotional communication.

P. 248, B. Tervoort, in The Young Deaf Child: Identification and Management. Acta-Ota-Larn-gologica.

3. The work of Piaget and others suggests that, roughly speaking, one may distinguish three stages in the intellectual development of the child. The first stage consists principally in establishing relationships between experience and action; the child's concern is with manipulating the world through action. This stage corresponds roughly to the period from the first development of language to the point at which the child learns to manipulate symbols. In this so-called pre-operational stage, the principal symbolic achievement is that the child learns how to represent the external world through symbols established by simple generalization.

J. Bruner, The Process of Education.

- 3.1 The essential characteristic of a program for sensorially and the concomitant environmentally deprived children involves organizing the daily activities of the children

in such a way as to enrich their experiences, and contribute to their intellectual and psychological growth, and cognitive development.

- 3.2. Both materials and methods of teaching need to be brought into line with the psychological realities of these children. At least in the primary grades, the content of curriculum needs to be in tune with their out-of-school experiences or else derived from experiences provided by the school.

--- Research on the cognitive style and language patterns suggests the need to capitalize on materials and tasks using operational and concrete, rather than verbal (or pictorial) stimuli. H. Taba, op. cit.

- 3.3. Researchers, in their studies of the early levels of cognitive development, agree that young children must have a broad base of concrete experiences and must develop effective ways of processing the information they gather in order to build generalizations and reliable concepts about their environment. M. Almy and E. Chittenden, "Young Children's Thinking," in Thought in Young Children (ed) Kessen and Kuhlman.

3.3.1 A single experience, no matter how successful, is not enough to build a reliable concept. A child must make many approaches from many angles over a period of time before a concept has some measure of stability. The work of Piaget, Bruner and Jersild and others supports the proposition that children cannot move ahead toward

abstract structure and reasoning without a broad base of direct encounters from which to abstract and generalize. . . . programs must be rich and diversified in concrete, manipulative and sensory learning experiences. R. Mukerji, "Roots in Early Childhood for Continuous Learning," Childhood Education, Sept., 1965.

3.3.2. Stimulation of the senses is an important requirement which is met through sensory experiences and is encouraged by access to material things.

3.3.2.2 All sense modalities need to be stimulated. H. Slankard, "Teaching a Deaf Child to Think" Volta Review.

3.3.2.3 Language symbols represent the meanings which the individual has discovered as a result of his perceptual processes. The sensory mechanisms respond to such characteristics as size, shape, weight, color, texture, temperature, odor, loudness, pitch, and quality of sounds, distance, movement, spatial and temporal relationship and body position. Sensory input, however, is only one part of the perceptual process. The neural signals must be coded, stored, associated with other stimuli, matched with previous experience, and patterned into meanings. Additionally and



simultaneously, the perceptual process also includes the feedback of sensations and awareness at the time language is being produced through speech. D. Harrington, "Language and Perception," Volta Review, March, 1965.

3.4 Perceptual training is provided in order to develop auditory and visual attentiveness, as well as auditory and visual discrimination. The developmental progression involves three stages.

- a. Sensori-motor level in which children handle the concrete materials and learn the labeling of objects and actions.
- b. Perceptual level in which children make discriminations of contrasting visual and auditory stimuli of increasing difficulty.
- c. The ideational-representational level in which situations are presented verbally and conceptually with a minimum of concrete perceptual support.

3.4.1 Let it be understood that teaching listening cannot be an isolated thing. If we are going to listen, we must have something worthwhile to listen to. Lessons planned purely for increasing listening skill fall far short of the functional use of listening which we hope will broaden the concepts, enrich backgrounds of understanding and add to children's store of knowledge or pleasure. We do not think of the teaching of

listening as adding a new class, but as something which we fuse into our programs as a basic part of each and every experience. M. Wilt, "Children's Experience in Listening," Children and the Language Arts.

3.5 The program provides experiences which are characterized by consistency, order, purpose and structural freedom.

The teacher supplies support for exploration and experimentation. She also provides warmth, acceptance, and self-concept support by providing an environment which is comfortable, orderly and aesthetically pleasing.

There is stress on becoming familiar with the mechanics as well as the facts about physical environment. It wants to orient the child to his immediate school and neighborhood environment through first-hand experiences such as trips, doll corner activities, stories and conversation. It wants to build information about familiar events, routines, neighborhood facilities, and people.

4. The first step in setting up a stimulation program is the selection of a particular subject area of reality, for example, modes of transportation, community structure, zoology, or almost any domain of reality which can be defined and presented in a form sufficiently simplified for a child to learn as Bruner has suggested.

The organization of levels which we have found more or less useful are: first, the gross perception of objects and their

functions; second, focus upon salient features of the objects, their functions and relations to the whole; third, ecological relations of the given structure and its components to other structures and aspects of the environmental context generally; fourth, classificatory activities, which involve sorting and grouping of objects according to abstracted structures and functions of objects and in relation to the organization of larger supra-ordinate systems.

With respect to our own contemporary scene, therefore, some of the obvious conceptual units with which to start a program are a home, school, store, factory, or farm. W. Fowler, *op. cit.*

4.1 For sample units with focus on concepts and language see animal, clothing, home units.

4.2 For experience stories growing out of the units, see Simmons' samples.

5. The program provides parent orientation, as well as enlisting parental support. It endeavors to involve parents in planning, observing, and assisting school activities. Discussion groups, workshop experiences are planned to provide parents with skills in oral reading, listening ....

Parents are helped to understand the necessity for a home climate which is emotionally conducive to learning.

Parents are helped to understand the language handicap concomitant with hearing impairment and suggested procedures and activities to be carried on at home are given.

## LANGUAGE - LINGUISTICS FOR THE HEARING IMPAIRED

Audrey Ann Simmons

1. Language, an auditory-vocal process, is universally acknowledged to be essential to human development. In order to understand the development of verbal behavior it is important to understand the nature, growth and function of the linguistic processes.
  - 1.1 Language content often has been divided by educators of the deaf into "vocabulary" and "syntax". Vocabulary, of course, refers to words and unitary phrases and their meanings. Syntax is traditionally referred to by teachers of the deaf in terms of "language principles," which include generally-accepted grammatical entities, such as word order patterns of sentences, phrases, clauses, and modifying structures; variants and inflections of nouns, verbs, adjectives, and adverbs; and function words and substitute words and their uses. Language principles also include certain grammatical structures and usages which seem to present special difficulties to the deaf, such as paratives, direct and indirect discourse, and idiomatic construction.

P. 86, P. Schmidt, "Language Instruction for the Deaf", Volta Review, Jan., 1966.
  - 1.2 A knowledge of the content and possible application of the techniques of linguistics and psycholinguistics might aid the teacher of the deaf in teaching and evaluating the language of the hearing-impaired.
  - 1.3 A description of language accounts economically for the observed linguistic phenomena. These are the linguistic units having relation one to another and which can be used to designate levels in the

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production and understanding of verbal behavior.

2. The most basic unit in the expression system are the phonemes. In English there are 46 which are grouped into consonant and vowels and organized into syllables in quite a definite and systematic way. Each syllable must have one and only one vowel sound. It may have one or more consonants before the vowel and one or more after the vowel. There are quite intricate restrictions on the sequences that may occur. Of all the mathematically possible combinations of English sounds, only a small portion are admitted as complying with the patterns of English structure.

2.1 Phonetic description can be made in three complementary ways:

- articulatory
- acoustic
- auditory

- 2.1.1 Irwin focused on the individual phonemes vocalized by infants and described the order in which they developed.

O. C. Irwin, "Infant Speech", Jr. Sp. Disorders, 1947, p. 397-407.

- 2.1.1.1 Following the Irwin techniques, Carr analyzed the development of sounds in deaf children.

J. Carr, "An Investigation of Spontaneous Speech Sounds of Five Year Old Deaf Born Children", Jr. Sp. Disorders, 1953, p. 22-29.

- 2.1.1.2 Sykes recorded the spontaneous vocalizations of deaf children 4 thru 7 years and found that with the exception of consonants, the range of vowels, diphthongs and consonants included all those of standard English speech. Differences in degree of hearing loss did not seem to affect the variety of sound combinations.

J. Sykes, "A Study of the Spontaneous Vocalizations of Young Deaf Children", Psychol. Monogr., p. 52, 1940.



- 2.1.2 Jakobson, who considers the phoneme to be a category of "distinctive features" proposes that when the child's attention turns to language, it will first distinguish in what it hears only the coarser contrasts, and will need time to appreciate the finer sub-contrasts. The same applies to the efforts to reproduce the sound in its own articulation. Instead of trying to find the sequence in which children learn phonemes, Jakobson focused his attention on the sequence in the acquisition of categories. His binary categories were:

|               |                 |
|---------------|-----------------|
| vocalic       | non-vocalic     |
| consonantal   | non-consonantal |
| compact       | diffuse         |
| tense         | lax             |
| voiced        | voiceless       |
| nasal         | oral            |
| discontinuous | continuant      |
| strident      | mellow          |
| checked       | unchecked       |
| grave         | acute           |
| flat          | high            |
| sharp         | plain           |

R. Jakobson & M. Halle, Fundamentals of Language, 1956.

- 2.1.2.1 Leopold confirmed the idea that the child learns the coarser, approximate movements sooner than the five intermediate adjustments. Hence, he makes binary distinctions before he makes finer contrasts within categories.

W. Leopold, "Patterning in Children's Language", in Psycholinguistics (ed. Saporta), 1961.

- 2.1.2.2 Erwin and Miller have said that "Passive control of phonological features antedate active control. A child can hear a phonetic contrast such as that between 's' and 'sh' before he can produce it."

Erwin and Miller, "Child Psychology" in National Society for the Study of Education, Part I, 1963.

2.1.2.3 The value of acoustic phonetics as it relates to the auditory possibilities in educating deaf children is treated by I. Hirsh, "Communication for the Deaf", The Report of the Proceedings of the International Congress on Education of the Deaf, 1963, p. 183-191.

2.1.3 The Haskins group suggests that the recognition of a particular sound pattern as one phoneme or another comes, after considerable practice, to be cued directly by the neural surrogate of articulation rather than the acoustic stimulus per se. p. 215, P. Eimas, "The Relation Between Identification and Discrimination Along Speech and Non-Speech Continua". Language & Speech, 1963.

2.1.3.1 The application of the information is related to the problems of the deaf child for: "First of all we have to realize that if he learns the system, he will be able to guess just as efficiently as the hearing person; only he needs more listening practice than the normal child. He must hear more speech, more continuous and louder speech so that he may learn the phonemic system and acquire the statistical knowledge that we all use when we take in speech....we have to adopt a new view of speech reception, to realize that the brain, whether of the hearing/or the deaf, can learn to make use of all kinds of acoustic information and, if given the opportunity, will organize the available cues into a system which will form an adequate basis both for the reception of speech and for its production... We can say in sober truth, therefore, that the message of all the recent work on the perception of speech is one of the greatest hopes for the deaf child.  
p. 190-191, Fry, Dennis, "Speech", The Report of the Proceedings of the International Congress on Education of the Deaf; 1963, p. 183-191.

- 2.1.4 Speech perception and production proceed by patterned wholes instead of by segments. Concatenation is a methodological artifact. The physical segments are not perceived in terms of their physical characteristics, but in terms of their functional characteristics.  
E. Lenneberg, "Primitive Stages of Lang. Deve." Disorders of Communication, 1964.
- 2.1.5 Chomsky and others have regarded the phoneme as superfluous, arguing that higher-order grammatical and semantic features override segmental cues. Mr. Neill says that there is very little that can be said on phonological development; almost nothing useful is contained in the literature of language acquisition on the problem of learning the sound system of a language, and it is very probable that specialists on deafness know more of phonological learning than do those -- who work with hearing children.  
p. 17, D. McNeill, "The Capacity for Language Acquisition", The Volta Review, Jan., 1966.
3. Related to the acoustic aspect of language is that of prosody, involving as it does the overall musical pattern derived from intonation, pauses, accent, stress, pitch, and juncture. It constitutes the punctuation of spoken language.
  - 3.1 Although the phoneme is the smallest unit of speech it is not the first linguistic unit which the child learns. Lewis has observed that the first items to be distinguished are intonation patterns rather than phonemes.  
M. Lewis, Infant Speech.
  - 3.1.1 Some say that intonation may be the vehicle on which children arrive at the rudiments of syntax since intonation is used for syntactical purposes and for discrimination between different emotional states.  
Pike, K., The Intonation of American English, 1945.
  - 3.1.2 English has four pitch phonemes, as it has four stress phonemes and like the stress phonemes, they are relative. It is used in English not only to convey various states

of emotion as joy, humor, fright, sorrow, etc., but also as an integral part of our syntax, e.g. interrogative, declarative, and imperative intonation patterns. (Question, statement, and request). See Fries, C., The Structure of English, 1952.

- 3.1.3 The importance of pitch patterns and intonation to understanding and transmission of meaning has been emphasized by G. Frager and H. Smith, An Outline of English Structure, 1956.

- 3.2 Accent can distinguish between members of different form classes, e.g.

|          |          |
|----------|----------|
| refuse   | refuse   |
| subject  | subject  |
| contrast | contrast |
| produce  | produce  |

- 3.2.1 Accent carries meaning in such situations as in lighthouse keeper (keeper of a lighthouse); light housekeeper (a housekeeper not dark or heavy); light housekeeper (one who does light housekeeping).

- 3.3 Stress, which is the loudness or softness of speech at four levels, tends to be phonemic. Examples using primary stress patterns:

Why's he going to Paris? (What's his reason?)  
 Why's he going to Paris? (and not some other city?)  
 Why's he going to Paris? (and not someone else?)

- 3.3.1 Stress is used to signal different kinds of modification, e.g.

1 4 4 3

This is an orderly room.  
 (a room for orderlies)

2 3 3 1

This is an orderly room.  
 (in good order)

1 3                      2 3

"a reading room" not "a reading room"

1 3                      2 3

It is "a dancing school" not "a dancing school."

- 3.3.2 Until it is given stress, a statement is ambiguous. e.g.  
 That boy is a student?

3.4 Juncture are combinations of pauses, changes in pitch and degrees of stress used in marking sentence ends and internal units of phrases and clauses.

Juncture is the difference between;

"gray train" and "great rain"

"night rate" and "nitrate"

"seem able" and "see Mabel"

Or where stress differs--"neat owl" and "knee towel".

3.4.1 Juncture can be terminal in sentences as in

Why's he going to Paris? and

Why's he going to Paris?

(meaning - Did I understand you correctly?)

4. A unit for grammatical analysis is the morpheme, the smallest element in language to which meaning can be assigned.

4.1 The broadest and most comprehensive categories of morphemes in English are roots and affixes.

|        |      |      |     |
|--------|------|------|-----|
| walk   | -s   | book | -s  |
| talk   | -ed  | rug  | -'s |
| follow | -ing | road |     |

4.1.1 Affixes may be either prefixes or suffixes.

| <u>morpheme</u> | <u>root</u> | <u>root &amp; affix</u> |
|-----------------|-------------|-------------------------|
| -ly             | glad        | gladly                  |
| -ness           | kind        | kindness                |
| -ing            | run         | running                 |
| -er             | teach       | teacher                 |
| un-             | happy       | unhappy                 |
| dis-            | satisfied   | dissatisfied            |

4.1.2 Suffixes may be divided into two categories: derivations and inflections. Derivations include those suffixes which may be followed by other suffixes. Inflection must always come at the end of the word to which they belong and may not be followed by other suffixes.

4.1.3 In answering questions the morphemic categories are utilized.

|                |           |          |        |
|----------------|-----------|----------|--------|
| How--?         | _____ly   |          |        |
| When-?         | _____ed   | _____ing | _____s |
| What kind of-? | un_____   | dis_____ |        |
| How many?      | _____s    |          |        |
| Whose?         | _____s    |          |        |
| Who?           | _____er   |          |        |
| What?          | _____ness |          |        |



4.2 There is abundant evidence to support the notion that the child learns these forms first by imitating the various inflected forms as they occur in sentences or phrases heard from other more mature speakers. For example, the child usually learns, "am", "are", "was", "is", "sing", "sang", "sung", etc., as separate items in their own contexts. It is impossible for him to learn all possible forms in this way, and usually sometime during the third year the child may be heard experimenting with false analogical forms like "bringed". The period from 3 to 8 is marked by considerable difficulty in learning irregular forms, but the fact that analogical formations occur at all attests to the ability of the child to respond to patterning in language at an early age. Carroll, John, "Language Development in Children", in Psycholinguistics.

4.3 Berko showed that structurally analogous forms - 3rd person singular, plural and possessive - were not acquired all at once, but in that order. Also, the varying forms were not learned simultaneously. For both the above morphemes and the past tense, the children learned the simple consonant form well before the syllabic form used, respectively, with sibilants (as in "matches") and with /t/ and /d/ (as in "fitted"). She also observed that children learn inflectional suffixes sooner than derivational ones. In her testing of children from four to seven years of age using nonsense words with natural inflections, she found, "The answers were not always right so far as English is concerned; but they were consistent and orderly answers, and they demonstrated that there can be no doubt that the children in this age range operate with clearly delimited morphological rules." p. 371, J. Berko, "The Child's Learning of English Morphology", in Psycholinguistics.

4.3.1 In an adaptation of the Berko technique applied to 140 deaf children ages 7 to 19 years, Cooper found the subjects to do fairly well receptively with comparative and superlative inflections, but their ability to produce those inflections in expressive language was almost nil. However, the children's productive skill in third person singular verbs and in progressive tenses was better.

In the past tense regular verb and in regular plural of nouns the expressive language equaled the receptive. They showed less skill, in general, both receptively and productively with derivational suffixes than they did with inflections.

Their lowest expressive skills in derivations were encountered in selecting the proper suffix for a noun, adjective, or derived adjective-stem to produce an adverb, and in selecting the proper suffix for verb-stem to produce an adjective. R. Cooper, "The Development of Morphological Habits in Deaf Children", Psycholinguistic Behavior of Deaf Children, (Ed Rosenstein and Mac Ginitie).

- 4.4 In a longitudinal study, Ervin and Miller found the regular order of development:
- affixing of familiar words
  - regularization of irregular forms  
(such as "do - does" and "foot - feet")
  - extension to novel words.

They also noted that when the syllabic variant began to be used, as in "boxes", it sometimes temporarily replaced such well practiced sequences as "hands" with "handses" or "handes". Eventually the appropriate morphemic or phonological cue came to condition the selection of the affix. S. Ervin & W. Miller, "Language Development" in Child Psychology, N.S.S.E., 1963.

- 4.5 Leopold found that practically no morphological devices were learned by his daughter during the first two years but imperfections of communication were an incentive to learn standard morphological features, which she did during her third year. He concluded that morphological devices are a luxury of fully developed language and that a small child can get along quite well without them, for a short or long time. W. Leopold, Language Learning.

5. Words are meaningful units for analysis. These may be divided into two groups, lexical or referential, and function or syntactical classes.

- 5.1 Lexical classes are few in number but have many members. In English these include nouns, verbs, adjectives, adverbs, and pronouns.

- 5.2 Many words or higher units of the linguistic system come to stand for, or name, the concepts that have been learned preverbally. Certainly this is true for a long list of words that stand for particular things or classes of things, qualities, and events. Then the "meanings" of words are the socially-standardized concepts with which they are associated. One of the problems in teaching concepts is that of teaching the association between words and concepts, and this is analogous to a paired-associate learning task. J. Carroll, "Words, Meanings, and Concepts", Harvard Educational Review, Spring, 1964.
- 5.2.1 The semantic field of words has been explored by K. Reigel, "The Acquisition and Utilization of Semantic Classes and Class Relations During Childhood", ASHA Convention, 1965.
- 5.2.2 Categories of impressions accompany learning and appear to progress with maturity from place to attributes, quality function, synonyms, and class names.
- 5.2.2.1 Word association is a method used to describe language development. Results of studies indicate that certain characteristics of word associations reflect changes with age. D. Palermo and J. Jenkins, Word Association Norms: Grade School Through College, 1964.
- 5.2.2.2 When word association tests were used with deaf subjects they reflected the language teaching of a specific school and relatively little language experience outside that teaching. Furthermore, deaf children show greater commonality in their word association responses. L. Restaino, "Word Associations of Deaf Children", Psycholinguistics Behavior of Deaf Children.
- 5.3 Vocabulary development for the deaf child entails attaching verbal symbols to previous experiences and also developing new concepts and the words to go with them. Furthermore, the child must learn to receive and express these words in a variety of tasks, including (1) selecting vocabulary so

as to maintain a balance between spontaneous, idiosyncratic words needed by the class or individuals and a core vocabulary needed for subject areas and skills; (2) introducing and explaining words in meaningful contexts; (3) clarifying meanings and usage; and (4) providing opportunities for frequent use of new words and review of previously learned ones. p. 95, P. Schmitt.

5.3.1 For suggested techniques, see Vocabulary Teaching Outline, A. A. Simmons.

5.4 Multiple meanings of vocabulary should be considered early in the child's education. Preprimers, primers, and first grade readers use the same word to represent many different meanings. p. 68, Paul McKee, The Teaching of Reading.

5.4.1 Lorge listed 70,000 different meanings to 570 of the most common words from Thorndike's list. The word "run" had 800 meanings.

5.4.2 Streng suggests some activities with the verb "make". Reading for Deaf Children.

5.4.3 "Light" may be a noun or a verb. A color can be "light" or a weight may be "light". A. A. Simmons, "Language Problems in Teaching Arithmetic", Proceedings of Auralism & Oralism, 1949.

5.4.4 Deaf children tend to use fewer synonyms than do hearing children. A. A. Simmons, "A Comparison of the Type-Token Ratio of Deaf and Hearing Children", Volta Review, September, 1963.

5.5 Figurative and idiomatic language constitutes a source of frequent difficulty for all children, but especially deaf children.

5.5.1 Children's books must be scanned for colloquial, the idiomatic, the metaphoric language and this introduced well in advance to the children.

5.5.2 Teachers cannot teach every figure of speech or idiom of the language but they can use in their language to the children and thereby help the child to generalize their meaning and use. e.g.



"Keep your eye on the clock."  
 "Cross as a bear."  
 "The rain hissed on the roof."  
 "My nose tells me."  
 "Aren't you cool!"  
 "The sun is playing hide and seek with  
 the clouds." etc.  
 A. Streng, op. cit.

5.6 For information regarding vocabulary of hearing children see supplementary outline, Vocabulary by A. A. Simmons.

5.7 For a study of the transition from vocal to verbal behavior of one child from 9 months 12 days to 22 months 15 days of age, see M. Bullowa, et. al. "The Acquisition of A Word", Language and Speech, April - June, 1964.

5.8 Information regarding vocabulary e.g. first word, word count, studies, concepts, etc., see Vocabulary Outline, by A. A. Simmons.

6. Those words which fall into function or syntactical classes are functors which have no meaning themselves but a signal meaning. While they number less than 175, they occur a third of the time in expressive language and bind the lexical words into meaningful structure. R. Fries, Understanding English, 1958.

6.1 Some examples are:

Auxiliaries - can, did, is, will  
 Conjunctions - and, as, but, if, while  
 Determiners - an, the, some, all, many  
 Prepositions - in, on, off, out of, by  
 Intensifiers - very, most, last, only

P. Roberts, Understanding English, 1958.

6.2 The meaning of the functors is important to the meaning of the sentence. e.g.

Take the medicine in an hour.

Take the medicine on the hour.

Similarly:

Any boy wants a car.

That boy wants your car.



|      |     |          |      |       |
|------|-----|----------|------|-------|
| a    |     | can      |      | a     |
| the  |     | does not |      | any   |
| that |     | will     | s    | two   |
| some | boy | may      | want | those |
| any  |     | has not  | ed   | many  |
| many |     | will not |      | most  |
|      |     |          |      | all   |
|      |     |          |      | few   |

- 6.3 The speech of young children generally leaves out the functors giving it telegraphic characteristics. All of the features of the reduced sentence can be explained by the fact that the missing words are unstressed in adult speech and are all phonetically obscure. Their discrimination in the flow of adult speech presumably is more difficult for the child and so they do not appear in his own. R. Brown and C. Fraser, "The Acquisition of Syntax", Child Devel. Monogr., 1964.
- 6.4 The implications for teaching functors to deaf children has been discussed by Alice Streng, "Improving Teaching of Language", Am. Annals of the Deaf, p. 553-563, 1958.
- 6.5 That deaf subjects tend to use fewer types of functors than hearing subject on the same task has been observed. A. A. Simmons, Comparison of Spoken and Written Language of Deaf and Hearing Children at Five Age Levels, unpublished doctor's dissertation, Washington U., 1963.
- 6.6 Using the Fries classification system Goda found significant differences between normal, deaf, and retarded adolescents on Class 2, Class 3, and function words. S. Goda, "Spoken Syntax of Normal, Deaf and Retarded Adolescents", J. Verb. Learn. Verb. Behav., 1964.
- 6.7 Woodward analyzed the ability of deaf and hearing children to derive morphological and syntactical meaning from material with newly invented words and then related it to reading. The ability to respond to questions incorporating linguistic rules correlated highly and significantly with reading comprehension. Helen Woodward, "The Structural Component of Linguistic Meaning", Proceedings of the International Congress on the Education of the Deaf, 1963.

6.8 Deaf children were shown to have more difficulty interpreting linguistic meanings that derive from the formal, or structural patterns of language than from word meanings. The 40 deaf subjects listed achieved consistently higher scores on the lexical items than on the structural, however, this study tested only recognition, or the receptive understanding of language rather than expressive language, or the ability to use these forms spontaneously. B. Hart and J. Rosenstein, "Examining the Language Behavior of Deaf Children", Volta Review, Nov., 1964.

6.9 When given a model and asked to supply the correct word deaf children did better than when asked to paraphrase a story. Grammatical errors from the latter source suggested that function words were involved in many of the redundancy errors. W. Mac Gintie, "Ability of Deaf Children to Use Different Word Classes", Jr. Sp. & H.R., June, 1964; S. Cohen, "Redundancy in the Written Language of the Deaf", Research Studies on Psycholinguistic Behavior of Deaf Children, 1965.

7. Syntactic occurrences in language incorporate word order.

7.1 As a child acquires a finite number of words, he must learn great numbers of intricate patterns for the formation of sentences from words. In English, word order is very important.

"The dog bit the boy." is quite different from  
"The boy bit the dog."

7.1.1 Different words have different functions and are arranged in sentences in certain order to express meanings. The function of a word, and consequently its meaning, may be changed by its position in a sentence.  
e.g.

Tom rakes the leaves in the yard.  
Tom leaves the rake in the yard.

7.1.2 Meaning is determined by nets of word relations. Each term will interact with the other and overlap. K. Riegel, op. cit.  
The banks overflowed with customers.  
Is that dog running in the yard, a poodle?

7.1.3 Word order may include phrase order also,  
e.g.

The experience: "First we squeezed the  
lemons. Then we made  
lemonade."

Can be recorded  
as:

"After we squeezed the  
lemons, we made lemonade."

Or in the more  
difficult way:

"Before we made lemonade,  
we squeezed the lemons."

7.2 The hearing child apparently learns syntax and structure by hearing and assimilating countless repetitions of the basic patterns of language. Brown and Bellugi described three processes involved in the child's acquisition of syntax; imitation but reduction, imitation with expansion, and induction of the latent structure. R. Brown and U. Bellugi, "The Child's Acquisition of Syntax", Harvard Ed. Review, 1965.

7.2.1 The difficulty which observers of children's language acquisition have had in explaining the complex inductions children make about the language they hear has prompted several writers to consider that children have a biological predisposition to construct certain types of linguistic rules, experience showing them which of the range of possibilities is employed in the language they are to learn. As yet, the link between the biologically given and the forms of experience necessary to convert potential into language has not been described. E. Lenneberg, The Biological Bases of Language, 1965.

7.2.2 The process of acquiring syntax is fairly well understood, and evidence is accumulating that children have a general capacity to acquire syntax; an inborn set of predispositions, if you like, to develop a grammar of immense complexity and richness on the basis of very small amounts of evidence. p. 17, D. McNeill, "The Capacity for Language Acquisition", Volta Review, Jan., 1966.

7.3 McNeill summarizes the stages of acquiring syntax by stating that the capacity to acquire language is regarded as consisting of two parts: a source of hypotheses, and an ability to test hypotheses against parental speech. It is on the second of these parts, much more than on the first, that the deaf child might be deficient. It is entirely conceivable that a child's capacity to acquire language provides many hypotheses comparable to the basic grammatical relations - hypotheses about other linguistic universals that a child also brings with him to the task of language acquisition. It is reasonable to expect a deaf child to possess a source of hypotheses as rich as a hearing child possesses, since in both cases, hypotheses result from a capacity for language acquisition rather than from language itself. If children, deaf or hearing, bring hypotheses to language acquisition, the problem in educating deaf children might be to get the relevant information to them. p. 31, D. McNeill, *ibid.*

7.3.1 Studies have been made of the written language samples of deaf children and the results of all support the finding that deaf children write as many words as hearing children but use more sentences to do so, thereby writing shorter less complex sentences. F. Huder and G. Huder, "A Comparison of Sentence Structure of Deaf and Hearing Children", Psych. Monogr., 1940. H. Myklebust, The Psychology of Deafness, 1960, M. Templin, The Development of Reasoning in Children With Normal and Defective Hearing, 1950.

7.3.2 When two types of output were analyzed spoken sentences of deaf subjects increased in length to age ten, thereafter, written ones get longer and spoken ones remain stable. A. A. Simmons, "Comparison of Written and Spoken Language of Deaf and Hearing Children", Proceedings of American Instructors of the Deaf, 1965.

7.4 One of our problems is how to teach children sentence forms without making the form of the sentence the principal concern. If deaf children are taught to have complete integrity about expressing their own ideas (not the teachers) at all levels, then the proper relationship between form and idea

can be established and the children can learn that they cannot adequately express their idea without the proper form. p. 18, Pittinger, "Development of Language", Volta Review, January, 1958.

- 7.5 Child is capable of understanding more complicated structures than he can use, therefore, teachers should beware of coding input to the child's output.

When he can use

"The boy has a ball."

"He has a bat."

Code back to him:

"The lucky boy has a ball and bat."

Similarly:

"Mary has a balloon. It is red."

Code back:

"Mary has a balloon which is red."



## HOW TO REACH THE DISADVANTAGED

We are concerned here with approximately three and one-half million persons of Mexican descent who live in cities and rural areas of five Southwestern states. This group of people suffers quite generally from economic and social deprivation. They are also quite generally excluded from the democratic process in this country.

The causes of this deprivation are controversial. We do not know whether the main culprit is internal seclusion or external pressure. We know only from statistics -- which are neutral -- the fact of deprivation.

In general the family income of Mexican-Americans is substantially below that of other whites in this region. It is, however, slightly higher than the income of non-whites. Thirty-five percent of the Mexican-Americans earn family incomes at less than the poverty level of \$3,000 (1960). This compares with 16 percent of the other whites and 42 percent of the non-whites. (It must be noted that the family income of Mexican-Americans is spread over a somewhat larger average

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number of persons. The normal Mexican-American household contains 4.3 persons, as compared with 3.0 in the normal "other white" household and 3.5 in the normal non-white household.)

Mexican-Americans -- and this is also true of non-whites -- concentrate in unskilled and semi-skilled occupations. Sixty percent hold such jobs as compared with 66 percent of non-whites. The proportion of professionals and managerial people is very small. Further, the proportion has not changed importantly from generation to generation.

As we might expect, unemployment rates are high. Unemployment is roughly twice the total rate for everybody -- 8 percent in 1960 against 4.4 percent. This rate is, however, less than the unemployment among non-white men and women.

And for the things that money can buy -- we know that Mexican-Americans inhabit a large share of the poorest housing in the Southwest. In many areas it is worse than Negro housing.

Poor as it is, in urban areas this housing is generally concentrated into ghettos. Though Mexican-Americans are notably less segregated from Anglos than Negroes, in some cities the Negroes and the Spanish-speaking almost seem to form one large ghetto. In other cities the two are separated as sharply from each other as they are from the dominant white population. Further analysis of this data shows that the degree of segre-

gation of both minorities is related to their income. Further, it is related to such factors as the size of the city -- and to certain characteristics of its minority population, notably the racial composition and relative size.

Lack of education is a deprivation. We know now that Mexican-Americans acquire less education than other Southwestern minorities. (The median is 8.1 years of school completed by males aged 14 and over against 8.4 for Negroes, 10.6 for Anglos). A series of post-war court cases ended legal segregation of Mexican-Americans in schools in Texas and California but de facto segregation continues.

Into this reservoir of deprivation new arrivals from the nearby and friendly state of Mexico arrived at an average rate of 44,000 people per year, between 1960 and 1964. While it is too soon to calculate the future rate of legal immigration under the recent law passed by Congress, it is certain that the new arrivals will keep many problems alive. The new arrivals cluster in cities, go mostly to California, and are very poor. In numbers, a full 40 percent of all of the "Mexican stock" (born in Mexico or parents born in Mexico) live in the state of California. It can be expected they will continue to go there in the future: Arizona, New Mexico, Colorado and Texas are less attractive to the new arrival.

Unlike most ethnic groups which despite peasant ancestry were rapidly urbanized in the U.S., the Mexican-Americans like Negroes have had the double problem of movement

to this nation and then movement from its rural countryside to the cities.

Not only are the Mexican-Americans deprived economically, but the poor Mexican-Americans fail to participate in the larger society. They are largely passive and skeptical of the political process -- formally through the mechanism of voting and informally because of the very small amount of communication with the larger society.

With respect to voting, lack of access to the vote, lack of knowledge, and lack of interest kept the Mexican-American effectively out of citizenship until very recently when finally Anglos helped the Mexican people in their organizational efforts. Few Mexicans were voters. Few Mexicans were involved in party politics. The change began during the Second World War -- a time of great broadening of horizons for the Mexicans. The war seemed to accelerate existing patterns of change and, quite possibly, to create new ones. Most certainly it accelerated a move to the cities. Thousands of workers changed quite suddenly from the work habits of a rural peasant society to modern industrial patterns. Older sons traveled throughout the United States and overseas and discovered some important gaps in the attitude of the larger society. At this time some political activity began.

The political activity was primarily local and primarily of a protest nature. In time, through the agency of groups such as the G.I. Forum, CSO, MAPA, and PASO some of the

boundaries of the Anglo political world were tested. In general the gains were small; very few Mexicans had precinct-level experience and few understood the mechanism of American representative government. In a local community, of course, the process is simply that of dealing with an entrenched Anglo politician.

Nonetheless, limited ethnic goals were set and were won in some instances. More important however is the continuous low level of participation. In 1960 a potential vote of more than 600,000 Spanish-surname citizens in California reached, in actuality, a registration of less than 20 percent. A much smaller percentage actually voted -- for a number of reasons including outright interference by Anglo registrars and challenges. A formal complaint on the challenges was made in 1962.

Thus, without effective mobilization of an ethnic vote, the Mexican-American share of elected officials is small. It is definitely smaller than their percentage of the population. It is also proportionately smaller than that of the Negro minority in states outside Texas. And, as expected, the appointed officials are also small in number and weak in influence.

Also notable is the largely ineffectual communications with the larger society. Although ethnic leaders participate nominally and effectively in some cities, most particularly in California, in most other Southwestern cities they are



ineffective and ignored. Nor, because of the language and education barrier, is there any degree of informal communication. True, there are some of the traditional instruments of newspapers, radio stations, and television stations but the vital in-between-men, the journalists, speakers, and educators are almost completely lacking.

Also of special consequence is the nature of Mexican-American leadership. In large part it seems to be chosen and legitimized by the larger society, by the local Anglo leaders, rather than the minority group itself. Perhaps for this reason it tends to present a placid surface of acceptance and passivity. It seems unable to mobilize votes. It is surely unable to translate the substance of minority dissatisfaction to the larger society. Internally it shows much factionalism -- even to the extent of an energetic and greedy scramble for very few offices, both real and symbolic, and a notable preoccupation with a "United front" to be shown to the Anglo community.

It is almost certain, of course, that continued use of the Spanish language as a common means of interchange by this population is an important barrier. Exact figures are not available on the persistence of Spanish, but it seems highly likely that the habitual use of Spanish in the home, at work, and in social life isolates the Mexican-American to a degree never found with other minorities. This persistence is unusual. There are no parallels among the huge groups of

Italians, Portugese, Greeks, Germans, and other groups assimilated in past years. And, interestingly enough, formal Spanish has long since given way to a kind of patois, highly variable from region to region.

Language also seems to slow normal participation in education and job opportunities and to perpetuate a peculiar kind of cultural isolation. The contacts with Mexico and with the customs of Mexican society seem very tenuous, nonetheless Mexicans throughout the Southwest hold to some degree of identification with the state of Mexico and "Mexican community." The term "la raza", the Race, still evokes feelings of comradeship and brotherhood. The Mexican government maintains an interest in these communities, now largely symbolic. And again, Mexican-Americans quite generally hold their Catholicism in common, even if nominal. It is unlikely, however, that any real identification with -- or knowledge of -- current Mexican culture is maintained. In turn, this very real degree of cultural isolation has fostered resistance and excused conflict with many agencies and influences of the larger community. From the point of view of Mexicans, contact by Anglo agents is likely to involve potential sanctions of one kind or another. In turn, of course, this evasive behavior tends to confirm community assumptions about the Spanish-speaking minority. Sometimes these assumptions are used to justify a double standard of policy implementation.

Relations with the police, for example, are tradi-

tionally poor. The Immigration Department has sometimes been used by local interests and private policy to the detriment of the Mexican population. Thus it, too, is misunderstood and feared. The social worker is often viewed as a doubtful stranger. School officials represent authority far more than they symbolize opportunity in many areas. Increasingly -- in this day of the welfare state -- the larger society will seek contact with the Mexican population. In a great many of these contacts the traditional isolation of the Mexican-American community is an important factor.

Another difficulty which affects this group -- and the larger society -- are a series of persistent and destructive ideologies. These ideologies reflect (1) views held by the majority group about Mexicans, (2) attitudes held by Mexicans about themselves and (3) opinions held by Mexicans about the larger society.

Majority group ideology about this minority group is both overt and subtle. Overt attitudes underscore Kultur, spelled with a capital "K", as a way of looking at Mexicans. Purveyors of the Kultur thesis include scholars, professional people, and laymen. Less obvious are the attitudes derived from this general view, proclaiming Mexicans to be, on the whole, socially irresponsible people who prefer to remain in conditions of poverty -- because they are non-achievers by Anglo, middle-class definition.

Mexican self-images often reflect abject social surrender.

For example, attitudes that seem to say: "The majority group must be right. We are, indeed, irresponsible, disunited and emotionally unstable." Cynicism is present when Mexicans allude to "Mexican-time" and to "the Mexican way of doing things."

Mexican-American opinions of the larger society range from complete acceptance "because we are all Americans" to deep-felt mistrust. To many Mexicans the Anglo majority appears as a highly organized but insensitive group of people. "They barge right in and take over," some have said. Fear of the majority also ranges from mild caution to feelings of persecution that border on paranoic behavior. "They only want to use us", is a frequently voiced comment.

To this point, we have considered the "Mexican community" descriptively as a single animal. Nothing could be more misleading. It is essential to remember always the tremendous diversity of this group of people.

In time, the community ranges from New Mexican settlements established a hundred years before Jamestown to new migrants from Mexico, resident in Los Angeles scarcely ten days.

In space, the community ranges from small groups of industrial workers in Michigan and Chicago to vast urban populations in the Southwest. Five states have significant minorities, dividing most of the estimated three and one-half million persons with Spanish surnames. A single state, California, can include populations as diverse as the relatively sophisticated area of East Los Angeles and hundreds of tiny,

semi-rural, isolated, and politically insignificant colonias in the San Joaquin valley. East Los Angeles appears to be changing at great speed. Other areas have changed very little in a hundred years.

The diversity continues even through areas of the most marked deprivation. Before 1950, for example, in most states very few Mexicans even tried to vote. But in New Mexico where Mexicans were protected by the Treaty of Guadalupe-Hidalgo, they were also not required to pay a poll tax or to meet language requirements. Thus, since 1912, the Mexican population of New Mexico has been an important political force.

Still another area -- that of median family income. We note that Mexican-American families in the San Francisco-Oakland area earn a 1960 median of \$6,308. In the Brownsville-Harlingen-San Benito area of Texas, the median income is \$2,206.

And in education. Let's examine two cities in Southern California, to keep the legal and de facto elements reasonably constant. In Bakersfield the median years of schooling completed by Mexican-Americans more than 25 years old is 7.3 years. In Los Angeles 8.9 -- nearly a year and a half difference. In San Bernardino-Riverside-Ontario nearly a full year more education than in Bakersfield but a year less than Los Angeles. Between states the difference can be extreme: ten median years achieved in Colorado Springs, Colorado, and only three years in Lubbock, Texas.



Remembering this diversity it is possible that the diversity itself conceals some important clues to Mexican-American achievement. Quite possibly the educational system can be blamed. Or, perhaps, prejudice and discrimination. Or perhaps the cultural isolation of the Mexican-Americans themselves. Or perhaps selective migration. The answer -- whatever it is -- surely is not simple. In fact, nothing whatever in the present situation of this population is simple -- except, perhaps, that this diversity must always be recognized.

There is, at the present time, some good evidence that the situation of the Mexican-Americans is improving.

As far as legal segregation is concerned, the improvement during the last generation is considerable.

Economically speaking, there has also been some improvement. There is reason to suspect that this improvement, or rather, rate of improvement, is so slow that Mexican-Americans will lag behind the larger society for some generations. Most probably their improvement has not kept pace with the recent and very rapid upgrading of American society in general.

Communication with the larger society is slowly improving. Most notable in this respect is the growing feeling of a "national minority." Higher incomes, more education, some success in local politics and some recognition by national politicians may have led -- remarkably because it took so many years -- to a consciousness of community. This conscious-

ness is beginning to be felt in locations as outwardly diverse as the little mountain towns of Colorado to overpopulated slums in the city of Los Angeles and San Antonio. It is beginning to refer not only to the semi-mystical basis of solidarity in "La Raza" but also in practical goals to be gained.

To this point we have assumed that deprivation is a bad thing, purely in humanistic terms. This is reason enough, of course, but continuous alienation and deprivation of any group seriously concerns the health of the larger society.

First, the Mexican-American population costs the larger society too much in scarce public welfare, health, educational, and law-enforcement resources.

Secondly, a large population is partially and badly integrated into a system of representative government. In a sense they are captives, rather than participants; they are excluded from the republican dialogue. Nor do they, in large measure, realize the failure of their government. People committed to the democratic process would try actively to work within the framework of this process. Without realization of the failure, there can be no great hope for participation. Thus a political problem becomes again a moral problem. That this situation continues is a standing rebuke to classical notions of free men in a free society.

Thirdly, the full range of talents from this group is largely unavailable to the larger society. It contributes less than its share to the ranks of professional talent. While in

recent years a group of political and social leaders have emerged, they, too, are stunted by their environment. As yet no Mexican-American leader has appeared to accept the challenge of a "national" minority. There are no Martin Luther Kings. Nor are there, as a matter of fact, any men of national stature in any field: even within the tradition of Mexican culture there are few important poets, statesmen, scholars, businessmen, lawyers, or artists.

Fourth -- and most important -- the Mexican-Americans offer an important test of the ability of our social system to adjust and accommodate -- not just tolerate -- an unassimilated minority group.

Our social system does not yet have this ability. Why not -- and what can be done about it -- is our continuing concern.

## THE TASK AND THE TEACHER - INCREASING SOCIAL SENSITIVITY

Ross Hancock

I want to talk with you today about "Increasing Social Sensitivity", which is the task for today's teacher, as I see it.

We are living in a period in which people are saying, "Be sensitive to my feelings", and are demanding that the teacher and the school be aware of their feelings. All parents are saying, "We want to be a part of the school", by their questioning the actions of teachers and administration. On the other hand, we have minority groups demanding to be a part of the life of America - to be appreciated for what they are and can do. Our city is in transition with whole neighborhoods changing their ethnic composition and more to come. With the changing neighborhoods come children - some with defensive attitudes, some with aggression, others with suspicion towards the teacher and the school power structure. In addition to these, the teacher has in her class other children who view with alarm the newcomers, are anxious about how they will be treated by the immigrant children. All of

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these children's "feelings of" and "feelings about" are culturally conditioned. They are heightened through situations which intensify insecurity and hyper-sensitivity.

If the teacher and the school are to help bring about a social change, then they must be concerned with building wholesome personalities, wholesome attitudes toward other people and wholesome self-concepts. The classroom is a place where self-respect, self-esteem, a sense of honor, and a regard for personal responsibility are learned in the process of interacting with other people.

The problem of the Negro and white, Mexican and Anglo students can be solved by the interactions of the classroom. The teacher is the person who sets the stage for the learning situations.

Some people feel if teachers learned about stereotypes and name calling, they could solve today's problems. This is an over-simplification of the problem and would set the feelings about minority groups aside in a category unrelated to general social attitudes.

Another attempt at extending social sensitivity is the "contribution approach". If you dwell upon the contribution of a particular group it is assumed that the children in the school belonging to that group, would seem more important to their classmates and be given status in the school setting. This also assumed that these children would henceforth become "proud" of their race and more ambitious, better



disciplined, and more eager to take advantage of education. Such assumptions do not seem entirely justified. First, feelings are not affected directly by information. Changes in social environment and in relationships are essential if feelings are to be changed - particularly those related to status. The white class mate of a Negro boy does not have respect and admiration for him just because they studied together about Booker T. Washington. Feelings about groups for the most part grow out of the immediate work and play relationships in the classroom and in the school playground.

It is providing for this exchange of feelings that I wish to discuss today. Your classrooms are unique in our school system in that they are already integrated. They have in them representation from all the groups that make up our city.

Let's talk first about the young child and how a teacher recognizes certain feelings as destructive of good classroom morale or as a handicap to the individual can, through some simple arrangements of situations, give a group or an individual new motivations or new goals as well as new feelings.

At this point, I want to emphasize I am not suggesting that the teacher be a therapist or a psychiatrist or that he perforate and probe his students to reach deep feelings. This is not the teacher's job or privilege. The teacher is not the child's doctor nor his therapist. I am suggesting

ways to change attitudes through teaching techniques and awareness of opportunities for emotional learning to take place.

In order to plan for shifting negative feelings of an individual some important factors need consideration.

First, the child must feel secure if he is to shift feelings. He feels secure in a classroom with an accepting teacher.

Second, acceptance means giving recognition to the positive and pleasing contribution of a person as well as recognition of his particular fears, anxieties, and irritations.

"That guy ought to be slugged!" "You feel mad."

"I can't do this problem." "You are really stuck."

Third, a shift in the group situation will very likely bring a change in feelings. With attention focused on a new activity people have time to revise their interpretation of what happened to cause resentment and hurt. Individuals can drop animosity and forget resentments without apology.

Finally, provide ahead of time the skills and understandings necessary for any new program or activity undertaken by the group. The group morale depends upon a sense of adequacy. The teacher ahead of time has helped students learn what to do and how to do it.

Example: Girl who is shy can make a better appearance if whole class presents program.

As the teacher watches revision of feelings occur, he does not make people take back their words or force an apology but simply recognizes and appreciates the new level of acceptance.

Sometimes feelings of groups are more difficult to explain or shift than the feelings of individuals. This is true because they have been built by factors in the community and home. Group feelings must be analyzed in terms of the problem as a whole.

In summary, the effective teacher gives recognition to individuals for abilities, plans situations where groups and individuals are useful, helps students become objective about feelings and articulate them.

We have talked about shifting feelings by rearranging classroom and school situations, now let's discuss teaching about feelings.

What kind of direct teaching about emotions and their causes and their effects upon people should be a part of a sound educational program?

Before we talk about ways of teaching feelings let's review some basic principles about when and where and what feelings are taught.

1. We need to know what the child is really feeling from an experience he has had.

Different children have different feelings about the same thing. For example, the policeman.

For some children he is a friend and an authority who is there to help and protect. For other children he is an unthinking, brutal person who punishes you because of your race.

2. Be sure the atmosphere is set so that students can talk about feelings they can handle.

Talk about feelings that are visible and recognizable in others as a result of an experience, such as anger, frustration. DON'T inquire so as to cause a child to experience feelings of guilt or rejection. You have no right to bring these feelings to the surface.

3. Only talk about feelings that a child is able to understand and articulate his concepts. They have no concepts about love or security.

Only late in childhood, say the 4th, 5th, or 6th grade, can we expect that children can talk about feelings certain situations engender in people. At this point they can talk about how a newcomer feels or how a person left out of a party feels. More complex problems relating to family life or psychiatric services can be discussed by high school students.

4. You can't teach rules about feelings.

For example, you can't teach the rule that all people should love and respect the policeman;

should not envy a sister; or should love a father or a mother.

This could raise guilt feelings and create a discrepancy between the reality of the situation and the ideal. This discrepancy exists for all of us. This discrepancy should not be sharpened.

#### Ways Feelings Can Be Taught.

Feelings can be taught by projection. Here a teacher uses a story as the situation. The group can talk about what happened in the story. They also can talk about their feelings and experiences in relation to the situation.

What is the value of talking about feelings?

1. They learn feelings they are completely unaware of because of limitations or lack of experiences.
2. By having a group discussion the child has access to the experience and interpretation of others experiences.
3. The child builds wider perceptions of his feelings as well as the correction or misinterpretation.
4. He learns to modify his own points of view as well as identifying with individuals who express the impact of their own experiences, gaining vicarious experiences.
5. He can use this vicarious experience to prepare himself for his next experience. He has some-



thing to check his own feelings against. People who have had little access to other people's experiences are often limited in their capacity to interact with others or to interpret their experiences.

#### Steps In Planning A Discussion Of A Story.

Do the children understand what happened in the story? So first you ask for recall and description; not for interpretation. You ask, "What happened to the people?"

1. The teacher wants to know what feelings her students are aware of - either what the author suggested or the student's own feelings. So you ask "How did the people feel about it?"
2. Next she wants to know what experiences out of the student's life this story has recalled.

If she feels that the story may be too personal she asks them to tell about "things that have happened to their friends and acquaintances". When a person talks under the guise of talking about what happened to someone else, a person can often talk freely about experiences he had had.

A typical question to start the discussion might be, "Has anything like this happened to anyone you know or to you?"

The fourth objective is to help the students become active participants in revising stories. From this practice

of reshaping situations the students develop the habit of analyzing life situations in which they are a part. To help them find other ways of handling a given situation this is a typical question to ask: "What could you or anyone else have done to change the situation?"

The final objective. To make interpretations and generalizations. Many students are very sensitive to situations but have had so little experience in interpreting them that they give naive or actual misrepresentation about them. In this phase of the lesson experience is given the child in making and checking generalizations. This is an opportunity to correct over-simplified accounts of feeling and reaction.

A typical question with which to start the discussion, "What conclusions can we draw?"

Another opportunity to teach about feelings is the curriculum. The on-going curriculum offers opportunities for emotional learning. Some examples of introducing material into the on-going curriculum that affords an opportunity to learn about the emotional needs of people.

The Westward Movement or any other historical accounts of discovery, of immigration, or the settling and planning of new communities affords an opportunity to discuss, "How a newcomer feels."

The experiences of being a newcomer are real and immediate to all children. They all can tell about how it feels to enter a new circle of people.

By discussing their own feelings as newcomers and then broadening their own identification with newcomers in other situations by reading, they may be led to discuss such questions as these:

"What kinds of help can neighbors or classmates give to newcomers?"

"When and how can a newcomer show that he reciprocates gestures of friendliness?"

"If newcomers need to be adaptable, how can they read a new situation for hints about what is expected of them - in class, in manners, in speech, and in ways of working?"

Discussions like this often lead to:

1. Planning a reception or party for newcomers to the school.
2. Writing a letter from the class to the parent of the newcomer telling them about the class.
3. Writing a letter to the parent telling about the school and its traditions.

From this activity your class begins to learn that all newcomers make readjustments in feelings but your class also begins the practice of helping people create welcoming and friendly situations and attitudes toward newcomers. Such social sensitivity is important in a transitional city like Los Angeles.

Another theme that is important at many grade levels is family life.

Young children can read stories and discuss roles of

different family members. They can discover that in some families father is the authority and that in other families mother is. They will be interested in the kinds of punishment meted out for not taking responsibility and also identify with resentment or rebellion about such treatment.

Older students will want to read about shifting relationships of adults and teenagers. They will gain new appreciation of the ways young people express their new found "grownupness" within the family circle and what acceptance and rejection mean at this point.

Still another theme may be built around work experiences. Young children can learn about how chores supplement the work of other members of the family. In all cases emotional learning is essential if the capacity to take responsibility is to be nurtured.

Lessons of this type may be planned to increase their social sensitivity. We must not be too optimistic about our capacity to expand social sensitivity. We can expand social sensitivity slowly and we must begin with what is familiar and immediate. Thus, no matter how much we may wish children to appreciate what it means to be hungry and destitute very few children get accurate concepts from teaching about the effects of major deprivation upon the lives and feelings of people. Social sensitivity begins with identification with feelings of the child in the next seat. Extending it gradually so that it crosses social distance is a task that demands careful planning as the child develops a new appreciation of himself and of people in his community.

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## CORRELATING READING AND LANGUAGE INSTRUCTION

Bessie Pugh

The number of books which have been written within the past two decades pointing up weaknesses in our general education system should lead every thoughtful educator to seek an honest appraisal of what is actually good and what is undeniably bad in our schools instead of girding on defensive armor to parry the blows and defend the status quo unquestioningly.

These are some of the facts the critics have cited:

Approximately 20 to 30 per cent or 10 to 15 million school children in the United States in typical classrooms cannot understand their textbooks because of reading retardation.

The United States has the lowest proportion of book readers of any English-speaking country. Three times as many adults in England were currently reading a book when interviewed as in the United States.

A reading test that was included on the Stanford-Binet intelligence test at the ten-year-old level in the 1916 edition and again in the 1937 revision could be passed by only 30 per cent of the ten-year-olds in the 1950's when the test was revised and restandardized.

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According to Dr. Jacque Barzum, Dean of Faculties and Provost of Columbia University, one out of every ten Columbia University graduates "needs coaching in the elements of literacy - spelling, punctuation, sentence structure, and diction. And the students cannot write because they cannot read."

A few years ago the New York City public school system found - in line with Dr. Barzum's statement - so many graduates of teachers' colleges had never been taught to read that the administration had to start a television series in order to train teachers to read.

One study by Thorndike showed that 50 experienced teachers, enrolled in a course in remedial reading, were unable to see the relationship between the sentences in ten selected paragraphs from a third grade reader.

Studies also show that the field of education attracts students who measure lower on standardized intelligence tests than most of the other major fields.

As educators of the deaf, we have vested interests in the quality of education being provided in our public schools since it is in these schools that most teachers of the deaf acquire their basic educational background. When students are allowed to graduate from high school without learning to enunciate clearly, write legibly, spell correctly or construct sentences properly, they are lacking in the essential qualities for becoming competent teachers of the deaf.

Courses at the college level are designed to present students with specialized techniques for clarifying to deaf children language concepts and other facets of sentence structure which the students themselves should have mastered long before entering college.

One can logically say that close screening would prevent inadequately qualified students from taking the training for teaching the deaf; but the acute shortage of teachers in this area has practically eliminated the practice of selectivity. For a number of years approximately 10 per cent of all new teachers entering the field annually were wholly untrained. This policy continued so long that probably half of the teachers in the classrooms entered without any specialized training for their job.

As far back as Croesus in the sixth century B.C., there were deaf children to be taught; but all the wealth of Croesus could not endow an untrained teacher with the necessary skills to educate his deaf son. Neither can a twentieth-century teacher educate a deaf child without the cumulative knowledge which has been amassed in this area throughout many centuries.

If we look at the educational achievement - or more properly speaking, the lack of educational achievement - of the deaf in the United States, we can see at a glance that there is a dire need for improved instruction. Although the deaf, as a group, have normal intelligence, only 6 per cent get an education above the tenth-grade level. At a time when chances

of employment are generally contingent upon at least a high school education, few deaf children are being prepared to meet this standard. The educational status of the majority of the deaf is in the category of functional illiterates - unable to read beyond the fifth-grade level - and a large percentage do not even get beyond the third grade.

We also need to examine current cliches to determine to what extent parroting of these is being substituted for sound reasoning and thereby impeding educational progress. One of these cliches which is especially obnoxious to me is - "The deaf child is more like the hearing child than he is different." It is equally true that a three-wheeled auto is more like a four-wheeled car than it is different; yet no one would put such a vehicle on the highway with normal cars and expect it to compete in the traffic. Attention must be focused on the missing wheel and something must be done about it to enable it to function with a proper degree of adequacy. The deaf child's "missing wheel" is his sense of hearing; so his entire educational program should be centered around the compensatory measures that can and must be taken to enable him to acquire an understanding of language through a visual channel rather than the non-functioning or inadequately functioning aural one. Certainly, maximum use of all residual hearing must be made, although this alone will not provide adequate compensation when the hearing loss is great.

To understand fully the language deprivation imposed

by a hearing loss, let us first consider the linguistic accomplishments of the normal hearing child at various age levels.

Beginning at birth, hearing children respond to the auditory stimuli around them and gradually isolate speech sounds and acquire effortlessly the ability to comprehend spoken language.

At about one year of age, the child's first words are spoken.

At the age of two, the child's vocabulary includes about 900 words which he combines into sentences in both statement and question forms.

In a study by Van Riper, he found three-year-old hearing children asked an average of 392 questions daily.

A child of four speaks 10,000 to 12,000 words daily.

A study by Mary Katherine Smith found that first-grade children had, on the average, vocabularies of 23,700 words (16,900 basic words plus 6,800 derived words).

Children of six also use every type of sentence structure - simple, compound, complex, and compound-complex. Their vocabulary and sentence structure is usually better when they enter school than that of the average deaf child upon leaving school. Yet despite his oral language attainment, a hearing child-as well as a deaf child-remains illiterate until he learns to read and write.



To provide for the hearing child's reading needs when he enters school, there is a wealth of standardized materials prepared by experts in the field at the cost of as much as one and a half million dollars per pre-primer. The vocabulary in all basal readers is carefully controlled with new words being introduced at specific intervals and repeated a required number of times to permit mastery. The objective of the authors is to use no words or introduce no concepts which are unfamiliar to young readers in their oral communication and to use only the kinds of sentence structure which the children employ in their own everyday speech.

Despite all the efforts to launch hearing children into successful reading programs, about one out of every four children entering the first grade each year is unable to compete successfully with his classmates and develops a reading problem.

Now let us consider the linguistic background of the deaf child upon entering school and the educational materials available for meeting his specific needs. With rare exceptions, the deaf child's concept of language is nil when he enters school, whether that be at the age of three, six, ten, or older. In most classrooms for the deaf, the only specialized equipment is a group hearing aid and all rooms do not even have this. As a rule, the educational materials are teacher-made or non-existent. Consequently, the quality of the deaf child's language and reading instruction is

dependent upon the teacher's skill and creativity in the preparation of suitable materials plus her ability to motivate each child to do his best through adequate provision for individual differences and wise utilization of time.

At this point I should say that there are a number of projects with teaching machines and programmed materials being carried on as research for the purpose of eventually providing classroom teachers with better teaching aids and materials; but until these materials have proved their worth and are made available to all teachers, each teacher is on her own. Our present problem is to consider possible ways and means for immediately improving the instruction of deaf children.

There are two visual approaches a teacher can use in presenting basic language concepts to deaf children. One is by associating the appearance of a word as seen on the lips with its specific referent; the other is through the association of the printed form of a word and the object, action, or situation to which it refers. Of the two, the latter has certain advantages. The printed word remains stationary, permitting scrutiny of its entire configuration as well as its component parts. In contrast, the spoken form of a word is never seen in its entirety but appears as a rapid succession of movements with approximately 50 per cent of the positions within a word being practically invisible. Without minimizing

the value of speech reading, I think greatly increased emphasis must be placed upon silent reading if deaf children are to be raised to the level of functional literacy.

Regardless of whether speech reading takes precedence over silent reading or whether the two are given equal emphasis, the initial vocabulary taught to deaf children parallels the first words spoken by hearing children, which include nouns representing people, objects within their environment, and action verbs. The names of objects are broken down into more specific categories - toys, food, furniture, parts of the body, articles of clothing, things in nature, and animals.

The initial step in silent reading is matching the printed names of two objects to the correct object. Next, the printed words are matched to pictures of these objects. As soon as a child can unfailingly match the printed words to both the objects and their pictorial representations, a third word is introduced and the procedure repeated.

However, language is much more than a collection of isolated words. It is the grammatical relationship between words and the various methods of combining them in communicating thoughts and feelings. Therefore, the sentence concept should be introduced as soon as the children have a subject word and a verb to combine with the names of several objects. Since small children are ego-centric, the pronoun I is a logical choice for the first subject word. There are

several reasons for selecting see as the first verb to teach in developing the concept of a sentence. First, the sense of sight, or what the child sees, plays a major role in the education of the deaf. Second, this verb can be correctly combined with all the nouns commonly included in the deaf child's beginning vocabulary except parts of the body. Third, the concept of see can be demonstrated easily in pantomime.

When the children can use the pronoun I, the verb see, and the names of familiar objects in sentences, they are ready for a new verb. Since research has shown that the average adult speaks an average of 2,500 words an hour during his waking day, and nine words, including the verb have comprise one-fourth of all the words used, there is ample justification for introducing this verb next. The fact that have can also be used with parts of the body is an additional reason for teaching it as soon as possible.

However, the verb have has so many different usages that concepts for all its meanings require years to master.

The first meaning of have to be taught should be that of ownership. In developing this meaning, a teacher can contrast see and have by holding up an apple and letting each child match the sentence "I see an apple" with the fruit. Next, the teacher can give an apple to each child and present the sentence "I have an apple." This procedure should be repeated with different objects until all the children have differentiated between the concept of see and the concept of have.



In teaching have with parts of the body, the child must be led to see that he not only can have, or possess, things which have separate entity from himself; but he also has body parts which are an inseparable part of himself and cannot be removed - barring accidents.

To enlarge the concept of have further, one needs to contrast the difference between have (to own) and have on (be wearing). A girl may have a red dress at home but have on a blue dress at school. Likewise, a child who has on a coat when entering the classroom, no longer has on a coat after it has been hung in the closet although he still has, or owns, the coat.

Before teaching the use of have in referring to temporary possession of an object, the concept of possessive nouns should be mastered. Then have (permanent ownership) should be contrasted with have (temporary possession). In doing this, the teacher might let a child hold her purse and present the sentence "John has Miss Smith's purse." There is little possibility that John would think he owned the purse.

Another usage of the verb have is with names of diseases or illnesses; yet deaf children frequently use forms of the verb be with these words, saying, "I am a headache" instead of "I have a headache." Although the teacher may agree with the first statement, it is obviously not the idea the child meant to convey. To prevent this error, the teacher should draw an analogy between have, used with parts of the body and have used



used with the malfunctioning of the various parts; as:

I have a head.      I have a headache.  
I have a tooth.     I have a toothache.  
I have a stomach.   I have a stomach-ache.

When this basic concept is understood, it can easily be extended to include the names of all diseases following the verb have, as:

Children have mumps.  
They have chickenpox. etc.

Another usage of have is with the names of meals. We have breakfast in the morning; we have lunch at noon; and we have dinner in the evening. On occasions, we have feasts and banquets.

As a corollary to this usage, we have certain foods at the different meals. We have cereal for breakfast and may have steak for dinner.

Sometimes have is combined with to, resulting in a wholly new concept, meaning must. We have to wear warm clothes in winter; we have to go to school to learn; and we have to work to earn money.

Have also has a number of miscellaneous usages which defy classification, such as:

We have parties.  
Women have babies.  
Teachers have patience.  
We have ideas and opinions. etc.

In addition to being an independent verb form, have is also used as an auxiliary verb in conjunction with the participial form of all verbs, even including have itself,

to form the present perfect tense, as:

have eaten  
have seen  
have been  
have washed  
have had etc.

In clarifying the usages of the present perfect tense, one must not be misled by the use of the word "present" since this tense is used in referring to past time. Children should master the use of the past tense long before the present perfect tense is introduced, so the first step in teaching the latter is to show that the past tense is always followed by a word, phrase, or clause indicating a definite time, whereas the present perfect tense needs no time phrase at all. Unless all previous teachers have consistently required pupils to use correct time phrases with the past tense, the problem of teaching this new tense is greatly complicated.

One way to introduce the use of the present perfect tense is by asking the question, "Have you ever \_\_\_\_\_?" In answering such questions, the deaf are prone to say, "Yes, I have ever \_\_\_\_\_," so the omission of the word ever in affirmative responses must be stressed. If a negative reply is given, the word never must be substituted for ever.

By utilizing the children's experiences, a number of sentences contrasting the use of the past tense and the present perfect tense can be built up, as the following examples show:

John had the mumps last year. (Time phrase.)  
John has had the mumps. (No time phrase.)

Mary rode in an airplane in June. (Time phrase).  
Mary has ridden in an airplane. (No time phrase).

The next step in teaching the present perfect tense is to show that certain time phrases, telling how often instead of a specific time, are sometimes used with this tense, as:

Sally has broken her arm twice.  
Tom has been to the zoo many times.

Another usage of the present perfect tense is in telling about something that began in the past and is still continuing,

Mr. Johnson has been our president for several years.

After the present perfect tense has been mastered, the past perfect tense should be explained. This tense combines the past tense of the verb have (which is had) with the past participial form of all verbs - including have itself - and is used in telling about two past actions one of which was completed before the other occurred. The past perfect tense is used in reporting the first event and the past tense is used with the other happening, as the following sentences illustrate

The children had gone to bed when Santa came.  
The rain had stopped when I started to school.  
Billy had had his skates for several weeks before there was any ice.

No doubt this lengthy explanation of the usages of have seems to be a digression from the vocabulary taught to beginning deaf children; but it was necessary to point out that although we can and should begin developing some usages of the verb have with young deaf children, it takes several years to teach all the ways in which this verb functions in sentences.

Now, in returning to language and reading concepts to be developed in beginning deaf children, we should consider the use of question forms with which hearing children so skillfully bombard adults to gain desired information. By associating the word who with the names of all people and the word what with the names of all inanimate objects and with animals, we lay the foundation for two beginning question forms, such as:

Who has a ball?  
What does Mary have?

After the pronoun you has been taught, children should be introduced to questions requiring yes or no answers. Since all questions necessitating a yes or no response begin with auxiliary verbs (do, does, did; have has had; is, are, was, were; etc.) the problem is to teach the most useful forms first. To me, the best choice is do and does since these verbs can be combined with both see and have - the two verbs which have presumably been taught in statements - to ask such questions as the following:

Do you see a doll?  
Do you have a doll?  
Does Mary have a doll?

In answering questions beginning with does in complete sentences, the verb must always end in "s" if the answer is yes. So, the answer to the question "Does Mary have a doll?" is "Yes, Mary has a doll" if the answer is affirmative. To eliminate the deaf child's tendency to say "Yes, Mary have a doll," I point out the final "s" in does, the final "s" in yes, and the final "s" in has, showing that the three s's

always go together. Since the failure to master this usage is one of the most common errors made by the deaf and one which many students never master, more attention should be given to this concept at all grade levels.

If the answer to a question beginning with does is negative, the verb form in the answer is identical with the verb form in the question.

As soon as deaf children have mastered the concepts of one and two, they should be taught the spelling of the plural forms of the nouns in their vocabulary, grouped according to the various rules by which their plurals are formed. Then the question form "How many \_\_\_\_\_?" can be introduced with parts of the body, using such sentences as the following:

How many arms do you have?  
How many eyes do you have? etc.

Research has shown that after hearing children have acquired a number of nouns and verbs, they begin using a few adjectives, so the deaf child should also become acquainted with adjectival concepts as early as possible. Although many adjectives are quite abstract in nature and cannot be easily clarified visually, others present little difficulty. In this latter category are the color words and those relating to size, such as big and little. These words can first be used to lengthen familiar sentences, using the verbs see and have. Instead of merely saying "I have an apple," a child may say, "I have a big apple" or "I have a red apple." Even as small a change as this necessitates a change in the article and an



understanding of the rule governing the use of "a" and "an". Since the child at this stage also has the concepts for the numbers one and two, at least, he can also use the sentence "I have two red apples" or "I have two big apples".

At this point, one must insist upon the correct word order in the sentence, requiring the number word to precede the color word or the word telling 'what kind of!'

When this word order is thoroughly established, words relating to both size and color can be inserted in sentences which now may be "I have two little blue cars," the position of the adjective telling size always following the number word. To aid the child in following the correct order of adjectives we refer to the headings in the Fitzgerald Key -  
How many: What kind of: What color:

In checking comprehension of a sentence like this, a teacher can use questions such as the following:

How many cars do you have?  
Do you have big cars?  
Do you have little cars?  
Do you have yellow cars?  
Do you have blue cars?

However, one cannot assume that a child who can answer these questions will also understand the question "What color are the cars" or "Are the cars big?" until forms of the verb be have been taught. The meaning of the verb be is very nebulous and the concept must be developed through sentence usage. Like the verb have, the verb be is one of the nine words

which constitute one-fourth of the total number of words used daily by adults. The fact that there is a different form of this verb for each person in the present tense (I am; you are; he, she, it is) makes this a very difficult verb to teach. Since the third person singular form of this verb is used so frequently with young children, that form should be introduced first. That can be done by making an association between an object and its color in sentences such as the following:

The apple is red.  
The ball is yellow.

Then the question "What color is the ball?" or "What color is the apple?" can be used. One can also ask "Is the apple yellow?" "Is the apple red?" etc.

When the plural forms of nouns are used, the verb must also be pluralized by substituting are for is.

Next the verb is can be used to show the relationship between objects and their relative sizes, as follows:

A mouse is little.  
An elephant is big.

Again the use of question forms should be used in conjunction with the statements.

Other adjectives following forms of the verb be which can be clarified for young deaf children are the concepts expressed by paired antonyms, such as sick and well; clean and dirty; hot and cold; old and new; pretty and ugly; happy and sad.

After the use of adjectives following forms of the verb be is understood, the use of adverbial phrases following forms of this verb can be presented in sentences, providing the children have had commands in which they were instructed to put various objects in different places, such as the following:

Put the book on the table.  
Put your coat in the closet.

After the objects have been put in various places, the children can be asked these questions:

Where is the book?  
Where is your coat?

To answer these, the children have need for the verb is followed by a where phrase, so their replies are as follows:

The book is on the table.  
My coat is in the closet.

The third usage of forms of the verb be comes in showing the relationship between two common nouns which are identical in meaning, as in the following sentences:

John is a boy.  
Mary is a girl.  
Father is a man.  
Mother is a woman.

In these cases where singular forms of common nouns are used, at least two words follow the verb is - an article and a noun. This should be contrasted with the use of adjectives following forms of the verb be in which the adjective always stands alone, as has been shown.

At a later time, children must be shown that proper nouns following forms of the verb be also stand alone; but

the capital letters in these words will set them apart as a different category, as in these sentences:

My name is Jane.  
Today is Friday.  
This month is July.

Furthermore, the plural forms of common nouns following the plural forms of the verb be also stand alone, as these sentences illustrate:

Robins are birds.  
Bees are insects.  
Bats are mammals.

Another use of the verb be is after the expletive "there" in such sentences as the following:

There are seven days in a week.  
There are fifty stars in our flag.

Teaching the use of the expletive is greatly simplified if the teachers use there in phrasing questions requiring there in the answer instead of omitting it as they so often do. If a teacher says, "How many days are in a week?" she will doubtlessly get the reply, "Seven days are in a week" instead of the correct response "There are seven days in a week." Carelessness on the part of the teacher breeds carelessness in the pupils and retards their linguistic development.

The fact that "there" is also used as an adverb adds more confusion about the meaning and usage of this word. If one says, "There are your gloves," the word there is an adverb telling place; but if one says, "There are some gloves on the floor," there is merely an expletive.

Forms of the verb be (am, are, is, was, were, etc.) like forms of the verb have also serve as auxilliary verbs in addition to their independent usage. As auxilliaries they are combined with all other verbs in the formation of the progressive tenses - both present, past, and future. Even two different forms of the verb be itself are combined in the progressive tenses, such as these:

Tom is being funny now.  
He was being naughty when he hit Billy.

In teaching the present progressive tense, which should be delayed until the concept of the past tense of action verbs is clearly understood, one must associate a form of the verb be coupled with another verb ending in ing with a continuing or uncompleted activity currently being performed. If one should say, "The baby is sleeping" when there is no baby in sight, this would in no way help to develop the concept embodied in the present progressive tense. This tense cannot be drilled on in isolation from a continuing activity actually being performed within the child's sight or a picture of some action in progress.

Although the past progressive tense can be found in simple sentences, its most common usage is in complex sentences where it necessitates an understanding of proper tense sequence in the different clauses. Consequently, its usage is too difficult for a young deaf child to master. Nevertheless, with deaf children as with hearing children,



adults habitually use much language which is beyond the youngster's comprehension with the expectation that constant exposure to the various language forms in the appropriate situations will make some impact upon the child and build up readiness for the formal presentations and explanations which will follow at the proper time.

To return to the sequential development of verbs in declarative sentences and the question forms needed in checking the child's comprehension of the sentences containing them, the child at this point should be able to use the present tense of the verbs see, have and be in statements and should be able to answer the following questions:

Who \_\_\_\_\_?  
How many \_\_\_\_\_?  
What kind of \_\_\_\_\_?  
What color \_\_\_\_\_?  
What \_\_\_\_\_?  
Do \_\_\_\_\_?  
Does \_\_\_\_\_?  
Is \_\_\_\_\_?

Next, the concept of the past tense should be developed. Since it is fairly easy to contrast the difference between see and saw, this verb may be taught first by showing an object, such as a toy car, and the sentence "I see a car." Then the car can be removed from sight and the sentence "I saw a car" be substituted for "I see a car." This will need to be repeated with many different objects until each child in the group can unfailingly match sentences to both present and past tense situations requiring the use of see and saw.

While one is developing the use of the past tense in statements, the corresponding question forms should be presented:

Did you see an airplane?  
Did you see a car?  
What did you see?

The concept of the past tense can be reinforced by showing the required changes in the action verbs which denote the completion of an act. If Johnny has been told to walk and he has done so, the sentences "I walked" and "Johnny walked" should be presented and the added letters "ed" should be stressed. Since we also have irregular verbs which make internal vowel changes instead of adding "ed" to form the past tense, these verbs will also require much drill for mastery. Verbs which double the final consonant before adding "ed" should be grouped and drilled on. In another category are the verbs which make no changes in the past tense, such as put, shut, hit, cut, etc.

Again, question forms in the past tense should be used to elicit the use of statements using the past tense of the action verbs, such as the following:

Did Johnny jump?  
Did Johnny fall?  
Did Johnny walk?  
What did Johnny do?

Simple no answers should be accepted in response to questions requiring a negative reply until the affirmative sentence structure is mastered. Otherwise, the children will tend to say, "No, Johnny did not jumped." Only one new concept should be stressed at a time.

After the past tense of the action verbs is well understood, the present progressive tense should be introduced. This is not a difficult tense to teach when properly presented; but if the children have been exposed to pictures of people doing things and the captions under the pictures are in the present tense instead of the present progressive tense and the teacher has encouraged this usage, the task has been made unnecessarily difficult. When we, as adults, say "The boy washes his hands," we have the concept of a habitual action in mind; but when a deaf child sees a picture of a boy washing his hands, it is hardly conceivable that the picture represents anything more to him than the single act currently being performed before his eyes - a concept that requires the use of the present progressive tense and not the habitual present.

It is axiomatic in teaching the deaf that the language we give a child must clothe the concept he has in mind if it is to constitute a learning situation. Consequently, I am at a loss to know why this rule is so frequently violated in teaching the use of the present tense when the present progressive tense is indicated.

The correct use of this tense can be presented clearly by asking a child to run. While he is running, a card with the sentence, "Johnny is running" should be exposed to view and associated with the continuing activity until it ceases. Immediately upon cessation of the act, the card should be turned over to reveal the sentence "Johnny ran." This should be repeated with each action verb until the children can

match the present progressive tense to all continuing actions and the past tense to all completed actions. Furthermore, they should be using the correct language forms in spontaneous situations. Reinforcement in the use of this tense should also be made through the use of pictures illustrating continuous actions and the corresponding sentence structures.

My Second Book to Read has some excellent pictures for teaching the present progressive tense; but its usefulness is destroyed by writing captions for the pictures in the habitual present tense. By getting two books, cutting out the pictures, and rewriting the sentences, a teacher can make suitable reading materials, however.

After the present progressive tense is well mastered and the children have the concept of such time phrases as every day, often, sometimes, etc., the habitual present tense can be introduced by using sentences based on the children's experiences, such as the following:

I watch TV every day.  
Mary visits her grandmother often.  
Mother drives the car sometimes.

The concept of habitual action is also contained in sentences telling what foods various animals eat daily, such as:

A mouse eats cheese.  
A rabbit eats carrots.

To summarize the sequential order for teaching the action verbs, we have the following steps:

1. Introduce the action verbs in the form of commands - walk; run; comb your hair; wash your face; etc.

2. Teach the past tense of these verbs by using statements after the action has been completed and in response to the question "What did \_\_\_\_do?" Stress the correct spelling of the past tense of the verbs.
3. Develop an understanding of the present progressive tense (a form of the verb be coupled with another verb ending in ing) used to denote a continuing action. Contrast this usage with the past tense which indicates a completed action.
4. When these three steps are mastered, teach the use of the habitual present tense with action verbs.

With these basic concepts for the use of statements, questions, and the correct use of the past, present progressive, and habitual present tenses well established, the children are ready and able to use the basic pre-primers with pleasure and profit. Furthermore, the teacher is equipped with appropriate means for checking comprehension of what the pictures illustrate and for providing enrichment of meaning for the meager vocabulary that accompanies the pictures.

To show just how meaningless pre-primer vocabularies are when used in isolation and without the enrichment that comes from questions and comments supplied by the teacher, let us consider the following story in a typical pre-primer:

"Bill. Come, come. Come, come. See Bill. Come and see! Come and see!" End of the story.

If a teacher limits herself to the uninteresting repetition of four words, she can do nothing toward motivating a deaf child to read. Neither can a teacher of hearing children. However, these teachers can supply as much oral enrichment to the stories as they choose. The author of one well-known



reading series suggests that a teacher might presumably use the following questions and comments in motivating her pupils to read a single page in one pre-primer:

"What is the boy in the picture doing? Why would he cover himself with leaves? Do you think he is hiding? Does he want Bibs to hunt for him? What would he do if he wanted Bibs to find him? That's right, Mary. He would call Bibs. Do you see the words below the picture? They tell what he said when he called. Who knows what the words are? Who can read them? That's right, Tom. They say, 'Bibs! Bibs!' Let's read each of the words aloud together as we look at it closely."

You will note that the sentence structure used here by the teacher in oral conversation is far more complex than that used in the readers and there is no vocabulary control nor fixed number of repetitions. The total number of words is 62, with only 14 of them being repeated at all. Of this total, there are 24 verbs, 12 pronouns, 7 nouns, 5 prepositions, 4 adverbs, 3 conjunctions, two contractions, and one article.

An analysis of the sentence structure shows that out of 14 sentence, 8 are questions, 5 are statements, and one is a command. Nine of the sentences are simple and 5 are complex. Of the 6 clauses used, 3 are noun clauses used as direct objects and 3 are adverbial clauses. One adverbial clause is introduced by if, one by when, and the other by as.

Because the oral language comprehension of the hearing child is so far in advance of his reading, he would doubtlessly be greatly helped by such stimulation; but any deaf

child who could comprehend this language through speech reading beyond the pre-primer stage.

Obviously, the same techniques used in teaching reading to hearing children cannot be followed without modification in teaching the deaf; but by following the procedure for developing language concepts which have been outlined up to this point, the little four-word story about Bill can be converted into the following and read with interest and meaning by a five-year old deaf child:

Page 3. Bill is watching television.  
He sees a cowboy.  
The cowboy has a guitar.

Page 4. Bill has a broom.  
The boy has a hammer.

Page 5. Bill is making something.

Page 6. Bill has a guitar.  
Bill make the guitar.  
He is playing the guitar.  
He is singing.

For page three, comprehension checks such as the following

May be used:

Do you see a girl?  
Do you see a boy?  
Do you see a cat?  
Do you see a dog?  
Do you see a television set?  
Is Bill watching television?  
Is the dog watching television?  
Is the dog eating?  
Is the dog sleeping?  
Does Bill see a horse?  
Does he see a cowboy?  
Does the cowboy have a horse?  
Does the cowboy have a guitar?  
Does Bill have a hat?  
Does he have on shoes?  
Does he have on boots?  
Does he have on a coat?

By writing meaningful sentences under the pictures and using questions such as these for every page in the pre-primers, deaf children grow to expect understanding from the printed page. Increased comprehension of the pre-primers will be gained if the teacher finds additional pictures depicting the same concepts and writes the appropriate language for them. Since Bill is pretending to be a cowboy and two other stories in this book are about children who are pretending different things, the concept of the verb pretend should be demonstrated. This can be done by printing commands such as the following on one set of cards:

Comb your hair.  
Wash your hands.

On another set of cards the commands should be repeated, prefaced by the words "pretend to," as in these sentences:

Pretend to comb your hair.  
Pretend to wash your hands.

With the first set of cards, the pupils should use a comb and water in carrying out the commands while with the second set, they should merely go through the motions, or pretend.

One of the Little Golden Books, entitled Pick Up Sticks, shows a little boy with a stick and all the things he pretends the stick to be, including a king's sceptre, a baton to lead a band, a pencil to draw pictures in the sand, an axe for chopping trees, a bow and an arrow, a riding crop, an oar for rowing a cardboard boat, a gun, a fishing pole, an airplane, ski poles, a flag pole, a spear, a hockey stick, a fencing sword, a violin bow, a hoe to chop weeds, and a scythe to harvest hay. Although

much of this vocabulary is too difficult for a young deaf child, the pictures make the concept of pretending very clear and simple sentences can be made to match a few of the pictures, such as these:

The boy is pretending the stick is a pencil.  
The boy is pretending the box is a boat.  
The boy is pretending the stick is a gun.  
The boy is pretending the stick is an airplane.

After the concept of pretending has been developed, the story about Bill might be reviewed and the verb pretend used in statements and questions about the story. Since two other stories in the book show children pretending things, there will be further opportunities to use this word in sentences.

Teachers of the deaf are not the only ones who have difficulty in adapting the basal readers to their specific needs. Teachers of culturally deprived children say their children have never seen neat green laws like the illustrations in the books. Being reared in fatherless homes, they sometimes ask why there is a man in the picture, and they are amazed to see people so well dressed. Shiny tricycles or other toys in the pictures are foreign to the experiences of children whose only toy is a tin can.

In some communities books are being written by local authors who choose concepts with which the children are familiar. One textbook in New York goes so far in this direction as to include a story about "a young boy watching police raid a marijuana party involving his chums."

At the other extreme, there are those who feel that the limited vocabulary and preponderance of simple declarative

sentences in beginning readers which are below the child's oral language level influence his growth in sentence structure adversely.

Anna Clute made a study of the sentence structure in seven pre-primers, five primers, and five first readers in 1943. A summary of her findings showed that out of a total of 10,997 sentences, 2673 were complex, 329 were compound, and 1199 were elliptical. Classified according to meaning, 9372 were declarative, 579 were interrogative, 864 imperative, and 282 exclamatory.

All the clauses used in the pre-primers were noun clauses except one and the number ranged from zero in one book to 81 in another, or from zero to 35 percent of the total number of sentences. Over 25 percent of the total number of sentences in the primers contained noun clauses. In addition, there were 10 adjective clauses and 7 adverbial clauses. In the first readers, over 21 percent of the sentences contained noun clauses; a little more than 4 percent had adverbial clauses; and slightly less than one percent included adjective clauses.

The full import of these findings should be clear to teachers of the deaf even though the study was by no means detailed enough for a complete analysis of all the language difficulties these readers present to deaf children. For our purposes, the noun clauses should have been subdivided into those used as subjects, predicate nominatives, objects of prepositions, indirect objects, and direct objects. If used as



direct objects, the number used in both direct and indirect discourse should have been given. The adjective clauses should have been classified according to the relative pronouns or relative adverbs which introduced them. The adverbial clauses should have been broken down into those indicating time, place, manner, degree, cause, condition, and concession. Then a further subdivision should have been made indicating the specific connective words used in introducing each kind of clause. The relative frequency of the different conjunctions connecting the clauses of compound sentences should have been indicated.

For a deaf child who is developing language concepts and reading simultaneously - not just learning to substitute written symbols for the already familiar oral ones as the hearing child is doing when he begins to read - it is essential to limit sentence structure and meaning to what a child first associates with his own experiences.

Before a deaf child can get any meaning at all from a direct quotation seen in print, a teacher must develop the concept of relating conversations by the use of stick figures representing her and the pupils engaged in real classroom conversations. For example, the teacher may draw a stick figure of herself giving the command, "Run, Tom" with these words enclosed in a balloon in comic book style. Below the picture she should then write the sentence -Miss Smith said, "Run, Tom!"

After the action has been performed, the teacher should again use a stick figure of herself and a balloon with the

question, "What did you do, Tom?" There should also be a stick figure of Tom with his reply, "I ran" shown in a balloon.

Below the stick figures, the conversation should be written just as it would appear in a book. When the children thoroughly understand classroom conversation expressed in the form of direct discourse, the conversation of characters in their readers can be made meaningful.

Although beginning readers have many sentences expressed in direct discourse, the indirect form is the one most often used in general conversation. Consequently, the deaf child must be shown the relationship between the two forms and taught how to change one to the other. This is a long and complicated procedure because statements, commands, and questions follow different patterns of sentence structure when changed to indirect quotations. Unless the children are taught these usages in an orderly way, they have no means of self correction and their language becomes jumbled.

There are two points to be stressed in changing commands to indirect discourse:

First, all affirmative commands become

\_\_\_\_\_ told \_\_\_\_\_ to \_\_\_\_\_.

Second, all negative commands become

\_\_\_\_\_ told \_\_\_\_\_ not to \_\_\_\_\_.

In changing statements to indirect discourse there are these two points to remember:

First, if the person to whom a statement is made has been mentioned, the indirect form follows this pattern:

\_\_\_\_\_ told \_\_\_\_\_ that \_\_\_\_\_.

Second, if it is not known to whom a remark was addressed, the indirect form is as follows:

\_\_\_\_\_ said that \_\_\_\_\_.

Unless these points are clearly understood and differentiated, deaf children will say "Mother said me that I could go."

Questions are changed to indirect discourse in two ways also. Those beginning with auxiliary verbs - am, are, is, was, were; do, does, did; etc. - are changed to:

\_\_\_\_\_ asked \_\_\_\_\_ if \_\_\_\_\_.

Questions beginning with all other words, such as who, what, why, where, when, etc., use asked in the indirect form followed by the exact word order of the direct question including the key question word, a subject word, and a verb in the past tense. The sentence Miss Smith said to John, "Where do you live?" becomes "Miss Smith asked John where he lived." The error most commonly made in this type of sentence is that of saying "Miss Smith asked John where did he live." This error is not limited to deaf children.

Comprehension of direct and indirect discourse also necessitates an understanding of the proper use of pronouns and the ability to identify their antecedents.

With the exception of clauses used in direct and indirect quotations, a young deaf child's sentence structure is generally limited to simple sentences where the connectives and and or are most essential to his needs. Since these words cannot be defined, the concept of the inclusiveness or aggregation inherent in the

word and must be developed by compounding the various parts of simple sentences relating to daily experiences, such as the following:

Mary and Jane have on new shoes today.  
Our flag is red, white, and blue.  
We ran and played at recess today.  
Jane likes to draw and color.  
We had cake and ice cream yesterday.

The concept of a choice or an alternative conveyed by the connective or must also be developed by presenting sentences with alternatives, such as these:

Are you a girl or a boy?  
Does a fish walk or swim?  
Does a dog have two feet or four feet?  
Will you go home in a car or on the train?

After the concepts of and and or are understood when used as connectives for the various parts of simple sentences, their usage as connectives of coordinate clauses is not difficult to explain. However, the concept of but as a connective in compound sentences presents a new concept to be developed. Instead of connecting two affirmatively related ideas as and does, the word but is a signal to reverse one's thinking and be prepared for the opposite of what one logically expects to follow. If the statement that "Mary is a bright girl" is made, one expects her school work to be good. However, if such is not the case, the connective but will be used to indicate a negative idea will follow.

Getting this concept thoroughly established with the use of but facilitates the teaching of although as a connective in complex sentences later because although and but can be used synonymously, as the following sentence illustrate:



Mary is very bright but she does poor school work.  
Mary is very bright although she does poor school work.

Feeling that research was needed regarding the effects of sentence structure on the ease of reading for hearing children, Ruth Strickland made a study in 1962 based on the hypothesis that "when children has mastered certain language patterns in their speaking, these patterns can begin to appear in the materials designed for teaching them to read." Although Struckland found "The oral language (hearing) children use is far more advanced than the language of the books in which they are taught to read," we have contrary evidence where deaf children are concerned. This fact makes some of the other conclusions of Strickland's especially pertinent for the deaf, including the following:

"Patterns of sentence structure appeared to be introduced somewhat at random."

"A pattern of structure, once introduced, seemed not to be followed up with further elements of the same or similar sort. Thus there seemed to have been no provision for the development of mastery of patterns of structure through repetitions."

"There appeared to be no scheme for the development of control over sentence structure which paralleled the generally accepted scheme for the development of control over vocabulary."

A detailed examination I made recently of the sentence structure on two pages of a fourth-grade social studies text, definitely supports Strickland's conclusions. Out of 74 sentences, 47 were simple, 13 were complex, and 9 were compound-complex. There were 5 sentences beginning with but which were, in meaning, parts of compound sentences. Of the 8 noun clauses, 6 were used as direct objects and 2 as objects of prepositions. Most of the noun clauses used as direct objects were of the same pattern as "\_\_\_\_ said that \_\_\_\_" used in direct discourse. Instead of "said that," the



phrasing was "believed that," "thought that," "hoped that," "knew that," etc. The 15 adverbial clauses included 3 causal clauses, 3 conditional clauses, 3 clauses of manner, one time clause, one place clause, one clause expressing degree, and 3 clauses modifying adjectives. There were 3 adjective clauses, one modifying a direct object, one modifying a predicate nominative, and the other modifying the object of a preposition.

Thus it is obvious that deaf children are not prepared to read fourth grade texts successfully until they have mastered all kinds of clauses - noun, adjective, and adverbial. Furthermore, a detailed breakdown of these clauses needs to be made in order to identify specific reading problems. Merely to say a child is having trouble with adverbial clauses does not tell whether his difficulty is with those expressing time, place, manner, degree, cause, condition, or concession. If the trouble is with time clauses, is it with those introduced by when, before, after, as, while, as soon as, since, or until? If the trouble is with place clauses, does the child understand that the connectives before and after can refer to place as well as time, as the following sentences illustrate:

Put quotation marks before and after all direct quotations. (Place)  
Cleveland was president both before and after  
Harrison was president. (Time).

Does the child understand that the connective since may introduce a causal clause as well as a time clause, as these sentences show?

Mary is smaller than Ruth since she is much younger. (Cause).  
John has lived with his grandmother since his mother died. (Time)

Is the child aware of the fact that as can indicate either cause, manner, or time, as in the following examples?

Helen cannot go to the movies as she has no money. (Cause).  
Do as I do. (Manner).  
I found a dime as I was going to school one day. (Time).

According to the dictionary, there are at least 17 different meanings for for. When a deaf child reads that Mary keeps the light on at night for she is afraid of the dark, does he understand that for is introducing a causal clause?

If a deaf child reads that Nathan Hale would die before he would betray his country, does he assign a time significance to the word before and interpret the sentence to mean that Hale would die first and then betray his country, or does he realize that this sentence means that Hale would rather die than betray his country?

Similarly, does the statement that John kept the money when he knew it belonged to Tom have a time interpretation or does the child understand that when means although in this instance?

It seems that adverbial clauses introduced by when are the easiest for deaf children to master for four possible reasons. First, the word when appears as one of the headings on the Fitzgerald Key and children learn early to associate the days of the week with when. Gradually, other words and phrases expressing time concepts are added, such as these: yesterday, today, tomorrow; last week, this week, next week; in a little while, in a few minutes, etc.

Second, teachers make frequent use of when in asking questions, thus reinforcing its meaning and usage. Third, when can often be substituted for other connectives in clauses without radically changing the meaning of a sentence, as the following statements illustrate:

The phone rang while I was eating lunch.

The phone rang as I was eating lunch.

The phone rang when I was eating lunch.

John went to school after he finished lunch.

John went to school as soon as he finished lunch.

John went to school when he finished lunch.

Fourth, when cannot be used with such varied meanings as some of the other connectives.

Except when used with the meaning of although, as was illustrated previously, the word when connotes time in some sense.

Having rated clauses introduced by when as the easiest of the adverbial clauses to teach, I will add that unless appears to be the hardest if judged by the infrequency with which it appears in the language of deaf children. Since the best definition of unless is if not, an understanding of the if concept facilitates the teaching of unless. However, one can review the meaning of or, the simplest form in which the concept of a choice or alternative can be expressed, and proceed directly to the use of the term unless, as in these sentences:

Eat your spinach or you cannot have any ice cream.

Unless you eat your spinach, you cannot have any ice cream.

In case a child is familiar with the meaning of if, the following sentence can also be used:

If you do not eat your spinach, you cannot have any ice cream.

It should be pointed out that unless can be used as an exact substitution for the two words, if - not.

Because the words before and after are used quite frequently as prepositions in simple sentences, it would seem that they would be easier to teach as conjunctions than they are. However, several factors complicate the teaching of these words. First, they can refer to either time or place, as has been mentioned. If a girl combs her hair before a mirror, before refers to place, meaning in front of. If she combs her hair before dinner, before refers to time. Second, the word after is sometimes used as part of a verb in such sentences as "where is the little boy who looks after the sheep?" In this sentence the words looks after constitute a verb, meaning tends. Third, any pair of words whose meanings express inverse relationship have increased possibility for errors in their usage. We can correctly say that February comes before March or March comes after February; but when the following questions are put to a deaf child, we may get identical answers:

|                                  |      |
|----------------------------------|------|
| Does February come before March? | Yes. |
| Does March come before February? | Yes. |
| Does February come after March?  | Yes. |
| Does March come after February?  | Yes. |

The fact that there are two pairs of sentences composed of identical words and only the order indicates meaning leads to confusion.

When clauses introduced by before and after are substituted for single words, we have four possible ways of expressing a single idea. We can use straight word order, placing the time clauses at the end of the sentences, or we can invert the word order, placing the time clauses at the beginning of the sentences, in the



following manner:

John brushes his teeth before he goes to bed.  
John goes to bed after he brushes his teeth.  
After John brushes his teeth, he goes to bed.  
Before John goes to bed, he brushes his teeth.

In attempting to invert the word order, deaf children sometimes fail to transpose the entire clause. Instead, they transpose only the words before or after, resulting in such statements as these:

Before John brushes his teeth, he goes to bed.  
After John goes to bed, he brushes his teeth.

Teachers should analyze each clause appearing in their pupils' textbooks and reading assignments and ascertain whether or not the children are using such constructions in their own spoken or written language. If they are not, it is safe to assume they will not understand the textbooks until the unfamiliar types of sentence structures are explained in terms of the children's own experiences.

This same policy should be followed in regard to simple sentences, too, since they often contain concepts that are just as difficult to explain as those found in compound or complex sentences. The following pairs of simple sentences, the compound sentence, and the complex sentence all express the same idea.

Mr. Smith is not well. Nevertheless he works every day.  
Mr. Smith is not well. However, he works every day.  
Mr. Smith is not well. Yet he works every day.  
Mr. Smith is not well. Still he works every day.  
Mr. Smith is not well, but he works every day.  
Mr. Smith is not well, although he works every day.

The purpose of each connective in these sentences is to signal that the second idea is contrary to the one indicated by the first



statement; but the words nevertheless, however, yet and still are just as difficult to explain as but or although. If a deaf child tries to break down the word nevertheless into the three little words he sees within it or however into its two component parts and find an associative meaning, he will get none. If he already understands yet, referring to time, or still as an adjective meaning quiet, he may try unsuccessfully to substitute known meanings for these words.

Comments were made earlier on the necessity for teaching the relationship between statements and their corresponding question forms as a means of checking language and reading comprehension. The Fitzgerald Key, if clearly understood and correctly used, can be of inestimable value in this respect as every word in the key headings is designed to initiate a question form, the answer to which will appear in the column directly below it if written in the form of a statement. However, I have been stunned by the atrocities perpetrated on the English language through misuses of the Key. Yet there is no more justification for criticizing the Key because of the abuses and misuses to which it is put than for condemning fire because it is used for arson and for burning people at the stake. A teacher who puts a predicate nominative in the direct object column or gives a transitive verb an indirect object when it has no direct object is not competent to teach correct English by any method. It is clear that a teacher who writes the word verb in the second column has missed the significance of the Key words as initiators of question forms

because no question can be introduced by "Verb \_\_\_\_\_?"

Similarly "What did \_\_\_\_\_ do?" cannot be used to elicit an answer in the present tense, future tense, present progressive tense, etc. There is no single question form that will elicit the correct form of all verbs as answers to questions and that is why Miss Fitzgerald merely used a symbol for the verb.

Questions should not only be used by the teacher in developing language and reading comprehension; but the children should be taught to make functional use of them in adding to their own information. One time a nine-year-old deaf child who had realized the value of question forms came to me and said, "You say, 'What season?' and I say, 'Spring, summer, fall, or winter.' If I say, 'this morning, this afternoon, this evening,' what is the question?"

On another occasion we had a tornado warning and had to send the children home so hurriedly no explanation of tornadoes could be made; but as soon as the children arrived the next day, one child asked, "When a tornado wants to stop, how does it dissolve itself?" The word dissolve had been taught months earlier and was the best synonym the child had for dissipate.

Children's ability to answer questions can be built up through the use of study guide questions - not only for their reading assignments but for each content subject as well. In teaching Come Along to a group of second grade deaf children I made out 639 study guide questions. A comparable number of questions had been made for each preceding reader. The children

wrote the long answers to these before we discussed the stories in class. This not only motivated their reading and improved comprehension but it advanced their speech reading ability. When the children became efficient in answering questions, I had them make out questions on the stories to ask their classmates and initiate discussions.

On higher levels I have had the pupils make out review questions in preparation for tests. By giving copies of each child's questions to the entire class, increased benefit was achieved. To improve the quality of the questions, I tried to include one or more pupil-made items in each test, often by grouping several of their related questions into a more comprehensive one. I recently read of a college professor who was using this technique with his students and found it improved their grades.

When pupils have reached the stage where they have two-step problems in arithmetic, the text frequently asks only one question although it is necessary for the student to formulate and answer an unasked question in order to get the final answer. This is another opportunity to develop the child's ability to ask questions.

The following is an example of a two-step problem with an unformulated question involved:

John had a half dollar. He spent a dime for gum and twenty cents for candy. How much did he have left?

Before the final answer to this problem can be found, the child must ask and answer the question "How much did John spend for the candy and gum?"

One of the best ways I know to teach children how to summarize stories is by asking them questions, the answers to which constitute a summary. To illustrate this we can use the following seven questions about a six-page story in Friends and Neighbors entitled "The Big Surprise," and the appropriate answers:

What did the children on Pleasant Street do one Saturday?  
Where did they take the leaves to burn them?  
What did they put the leaves on?  
When did Zeke start the fire?  
What did the children see under the bricks after the leaves had burned?  
Did the children know that Zeke had put the potatoes under the bricks?  
Was it a pleasant surprise?

The answers to the above questions made the following summary:

One Saturday the children on Pleasant Street helped Zeke rake leaves. They took the leaves to Mrs. Hill's garden to burn them. They put them on a pile of bricks. After all the bricks had burned, the children saw some baked potatoes under the bricks. The children did not know that Zeke had put the potatoes under the bricks. It was a very pleasant surprise.

After children have summarized enough stories in this way to see that only essential ideas are put in a summary, they should be given a list of questions containing some that relate to non-essential facts along with seven or eight questions about pertinent ideas for a proper summary. Children who have an adequate concept of a summary will quickly eliminate the unneeded questions and answer only the essential ones.

The following is an original summary of a story made by a fifth-grade deaf student without the aid of any questions at all after the concept of a summary had been grasped:



### HUFFI, THE STONE BREAKER

Huffi was a stone breaker who wanted to change into a king because a king was stronger than he. Huffi became a king. He was happy for a while; but he didn't like it when he learned the sun was stronger than a king, so he changed to the sun. He was happy at first because the fruit turned ripe when the sun shone on it. Then a black cloud moved in front of the sun. He didn't like being the sun then because the cloud was stronger than the sun, so he became a cloud. He was happy a little while. Soon he didn't like being a cloud because a rock was stronger than the flood caused by the cloud, so he became a rock. A man hit the rock. Huffi didn't like being a rock because he was hurt. He became a man again. Then he was happy.

The fact that the Key is a great aid in teaching deaf children to ask and answer questions correctly does not imply that a right answer is necessarily synonymous with understanding of the lexical meaning of all the words involved. Exponents of structural English use nonsense words to show how structural clues alone tell us many things about a sentence even when we know the meanings of none of the words, as in the following sentence:

Woggles ugged diggles.

It is apparent that the "things" mentioned are in the plural and that what happened to them took place in the past. If we were asked if woggles ugged diggles, we would answer in the affirmative.

To show how deaf children with an adequate understanding of the Key can also answer questions without understanding them, I made up the following story for a fourth-grade class and asked questions about it:



While some children were playing in an abandoned shack one day, they ignited some rubbish by accident. A neighbor saw the holocaust and went over and extinguished the conflagration. The children were reprimanded for their indiscretion.

The following questions were then asked:

Where did some children play one day?  
What did they ignite?  
Who saw the holocaust?  
What did the neighbor do?  
Were the children reprimanded?

Two out of eight children had perfect answers and no child had more than minor errors; yet their understanding of the story was almost nil.

Since both the lexical meaning of words and sentence structure play important roles in reading comprehension, the difficulty of all texts for the deaf should be evaluated in terms of these two factors. Betts has given us some valuable criteria for evaluating the suitability of reading material for hearing children in terms of vocabulary load. If there are more than five unfamiliar words per running hundred, the material is too difficult for instructional purposes. For pleasure reading, there should be no more than three unfamiliar words per running hundred. Yet I have seen deaf children with reading achievement level on the fourth grade using eighth grade texts.

As has been mentioned before, the criterion for sentence structure in books for hearing children is that no structure should be used in textbooks which the children do not use in their own speech. This criterion should also be applied to textbooks for the deaf.

If we accept the same criteria for judging suitability of reading material for the deaf as is used for hearing children, we still have the problem of checking the unknown vocabulary and unfamiliar sentence structure in each book. We cannot expect the children to tell us which words are unknown to them nor the sentences they do not understand.

In a study by Jeanette Elivian, she found that fourth grade hearing children selected only 25 percent of the words which later tests showed they did not know while seventh and eighth grade pupils identified only half of the words whose meanings were unknown to them. Even when the words were defined in context, fourth grade pupils were able to define only 10 percent of them; seventh grade pupils, 36 percent; and eighth graders, 55 percent. This places the responsibility on the teacher for determining the suitability of a book for her class.

Until we bring a much higher percentage of the deaf up to the point of functional literacy, I do not know how we can justify our training programs and present expenditures.

The points I have outlined are all essential to preparing children to function at the junior high level, the point of functional literacy.

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## TEACHING SPEECH IN THE CLASSROOM AND AT HOME

Donald R. Calvert

During the morning session we will consider a general, comprehensive, view of teaching speech to deaf children, which includes teaching outside the classroom as well as in the classroom itself. From this general view of teaching speech, we will go in the afternoon to a few specific aspects of speech training in the classroom. During the few hours we have together today it would be impossible to cover all aspects of speech even in a superficial way, or to cover any one aspect in great depth. I have chosen, therefore, to attempt to describe to you some ways of thinking about speech teaching which may give you a frame of reference for improving your teaching. The first parts of both the morning and afternoon sessions will be lecture, with the last parts open for discussion and questions. During this discussion period you may become as specific as you want and ask questions which will be of immediate practical value to you.

I have recommended three references for reading in preparation for today's session. These purposely cover a

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wide span of time of publication, dating from 1928 to 1964. This reflects my belief that information is not necessarily bad because it is old, and is not necessarily good because it is in a new publication. There has been a tendency in publications on teaching speech to stray away from the actual teaching of speech to the aspects associated with speech on which there is more information. So that we find in books on teaching deaf children to talk, most of the pages are taken up with the normal development of speech, the perception of speech, hearing aids and amplifiers, auditory training, diagnosis and types of deafness, and language in general. I am sorry I cannot recommend any one single book as a complete and practical guide to teaching speech to deaf children.

The importance of speech in the teaching of a deaf child cannot be stressed enough. Speech is the most natural and readily available means of using the language that we know. The constant use of spoken words reinforces the knowledge of our language and gives us a chance to experiment with language forms that are new to us. The entire oral approach to communication for deaf children is most frequently judged on the speech that is produced. It is incumbent upon those who teach speech to deaf children to strive for the best possible speech the child can produce or to let the child learn some other means of communication.

To begin our morning session I am going to develop a visual model of the process of learning speech and then



discuss the teacher's role as manager of this process.

The first section of this model is labeled "external input." This is the raw material fed into the child's perceptual system which stimulates him to speak. It includes speech sounds and non-speech noises, lip, jaw, and tongue movements, facial and bodily gestures, airflow, and vibrations. Speech output directly reflects the nature of this external input. Some linguists have stated that by six or eight months they can listen to the babbling of a baby and tell what language he has been exposed to. Case histories of those children who were deprived of the stimulation of external input, particularly of sound, show that they did not develop speech. The reports of those children presumably raised by animals indicate that the noises they made were similar to those of the animals.

The next section of the model is labeled "receptors." These are the receiving mechanisms of the sensory systems which permit the raw material of external input to enter the human organism as sensation. These receptors are marked by limitations which determine our perception of the outside world. For example, the ear is limited in the range of frequencies and intensities of sound it can receive; the eye is limited in the range of light it can receive; and the tactile system is limited in the range of vibrations it can receive. Within these ranges these sensory systems can receive there are limitations on the

fineness of differences they can receive and transmit. Limitations of both range and fidelity of reproduction can be increased with damage to any of these mechanisms.

While there is no evidence that these receptors can change with training, there is evidence of deterioration or retarded development with deprivation of sensory stimulation. When animals are deprived of light or patterns of light, their visual receptors are found to be less completely developed than those of similar animals exposed to normal light and patterns. There is an assumption, but no proof, that there will be retarded or incomplete development of the human ear if not exposed to acoustic stimulation. The receptors have the function of receiving physical stimulus from the external input, filtering it through their limited systems, changing it to a code the nervous system can use, and transmitting the encoded stimulus to a central nervous system.

The next section of the model is labeled 'mediator.' This is the mechanism of the central nervous system that receives the coded stimulus transmitted by the receptors, processes or mediates the information, and activates appropriate muscles for speech production. This is an area of great complexity which is of great importance to the teacher, but which we know little about. The mediator has multiple functions of storage of information (memory), retrieval or recall of information so stored, comparison of different stimuli or of a new stimulus with

one recalled, recognition of stimuli previously received, integration of information involving association and categorization of stimuli, planning for appropriate action based on stimuli received including the planning for words to be said, the order in which they are to be said, and the appropriate sequence of muscular actions to carry out their production, and finally, the activation of appropriate muscles for production.

This section also has its limitations, varying among individuals and with damage to the mechanism. Individuals differ in their ability to remember and to recall in an appropriate situation, to discriminate stimuli, to recognize and integrate information, and to plan and activate appropriate muscular movement. An example of pathology of the mediator affecting language is in aphasia when an individual cannot process incoming language or cannot formulate language for speech production.

The mediator is of special interest to the teacher in that it is subject to great change with training. Although it apparently has innate limitations within each individual, its development begins early and continues at an accelerated rate with appropriate stimulation and training.

The next section of the model is labeled the "speech output." The speech output is the result of activation of a variety of muscles by the mediator and will be directly related to the external input as filtered and

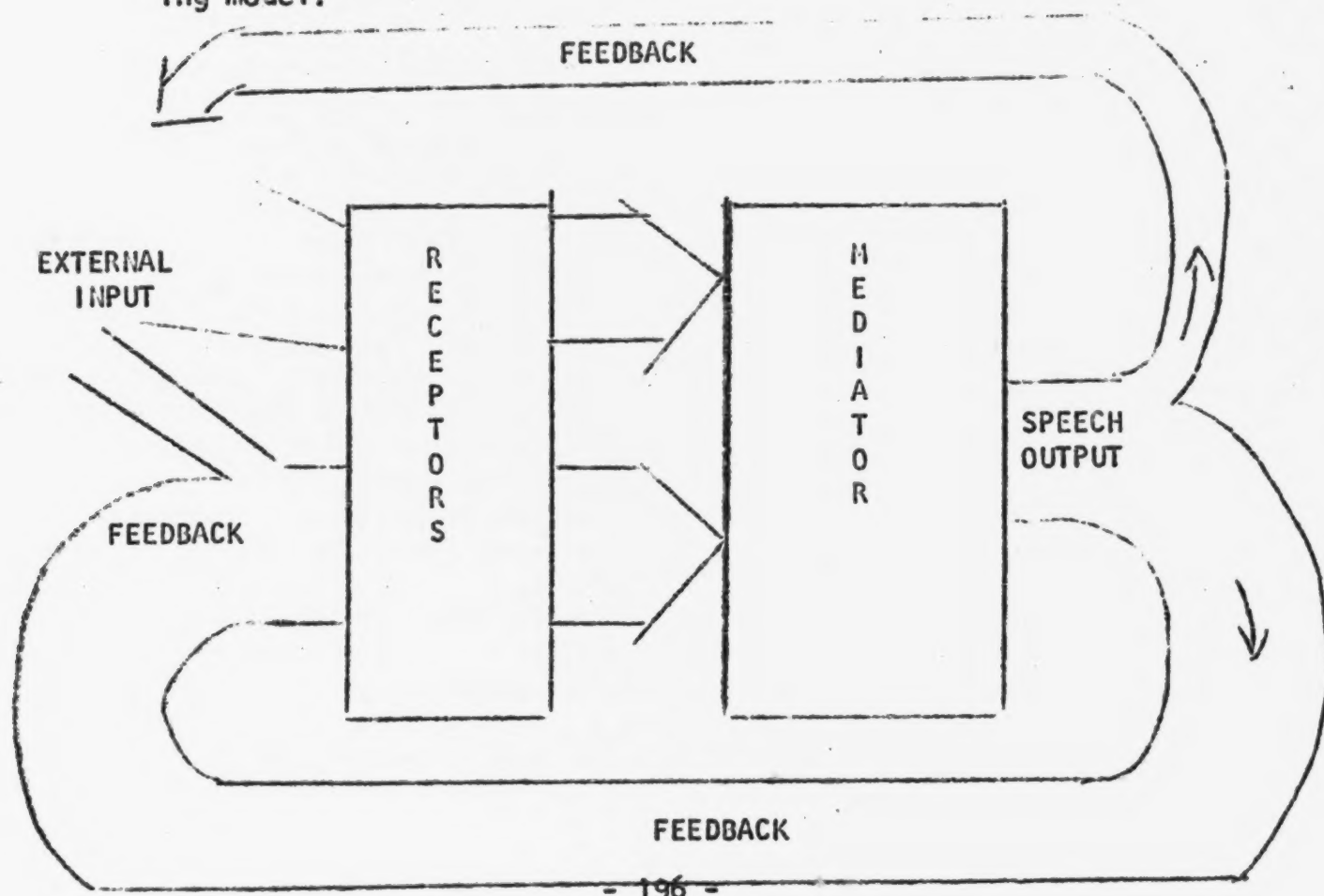
transmitted by the receptors, and as processed by the mediator. Its products are speech sounds, lip, jaw, and tongue movements, facial and bodily gestures, and vibrations. These products are designed to carry information to a listener or observer. This output is studied in the fields of physiological phonetics and acoustic phonetics - for completeness we might someday add visual phonetics and tactile-kinesthetic phonetics. While the quality and quantity of speech output is of direct and immediate concern to the teacher, it cannot be well handled without considering its inter-relation to other sections of the speech-learning model. Neither is it necessarily the end of the speech-learning process.

The next section of the model is labeled "feedback." In addition to the speech output carrying information to another listener or observer, it carries information back to the producer. The speech output will have some effect on the listener or observer and his reaction will feed back to the producer important information about his production. The producer also will have more direct feedback through reception of his speech output by his own receptor and mediator mechanisms. With such information he may be able to monitor his speech output, making changes when errors are perceived. The feedback information available from speech output will include acoustic information from speech sounds, tactile information from the touching of parts of the speech mechanism (lips, tongue, teeth, palate), and from

vibrations of the vocal folds, and kinesthetic information from the stretching of muscles and tendons. There is also potential visual feedback information from movements of the lips if they could be observed, and tactile feedback information from feeling vibrations and airflow with the hands.

This feedback information must itself go through the receptors where it is filtered and transmitted to the mediator system for processing. The mediator compares the speech output information received with that intended and either formulates appropriate changes or accepts the production. The maintenance and improvement of speech is dependent upon the efficient operation of such feedback.

We have just described several aspects of the process of learning speech and have related them on the following model:





The teacher who accepts the responsibility of teaching speech should prepare to be a manager of this system, making alterations and improvements wherever appropriate. This means that her management will necessarily go beyond the classroom, into the home or dormitory, and well beyond the usual scope of the speech lessons. Using the model I have developed, let us go through some of the aspects of this management and see what it is that the teacher can be expected to do.

The external input will directly affect the nature of the speech output. The quality as well as the quantity of the input can be changed and is important to manage. Studies show that in so called "disadvantaged" homes there is a reduced amount of speech input available to the child, reflected in greatly reduced fluency and vocabulary in the child's language. In any home, disadvantaged or not, the realization that a child is deaf may affect the external input to that child in exactly the opposite direction of that desired; that is, the family may believe it is futile to talk to the deaf child and give him no speech stimulation whatsoever. From our broad view of the process of teaching speech, the job of the teacher begins shortly after the birth of the child with the early management of his external input, and continues through his school career.

The parents must be counselled early on the importance of auditory, visual, and tactile input to the baby. Before a hearing aid can be fitted, it is possible for the

parents to present the child with the best hi-fi amplifier known -- talking directly into the child's ear. Babies respond early to movements to the face and respond with pleasure -- this may be the beginning of a habit of watching the lips and of imitating speech. It can be started as part of a rather frequent occurrence in a baby's life, that is, the changing of diapers. The baby who hears little can feel the mother's voice as he is held next to her if she will talk to him or sing to him. Such tactile sensations may be the beginnings of the awareness of speech rhythm and of the production of voice.

As the child grows older, the quality of external input will become more important. It is not unreasonable to believe that improvement in the enunciation of the parent's speech may be an important factor in the child's speech development, offering him observation of better lip movements and greater accuracy of acoustic output from which to discriminate speech phonemes, and on which to base his imitation. It is equally important to consider the teacher's own speech pattern, not just during speech lessons but during the entire teaching day.

As the child grows still older, it is possible to plan events and language (both in the classroom and at home) which will concern particular speech sounds being developed or in need of correction. Such planning of the early external input has become the basis for teaching, not only speech but language in general as well, in some programs

for the education of deaf and severely hard-of-hearing children.

Regardless of the quantity and quality of the external input, no information will be received by the child unless it can pass through his receptors. Again it is the teacher's job to act as the manager for the maximal use of the receptors that the child has available. It is the teacher's function to see that appropriate tests of the child's sensory systems have been made and that the best remedial action has been taken where indicated. How many of you are sure that children in your classes last year had had recent vision tests and were using their vision to its best advantage? How many young deaf children get vision tests before they are six or seven years old? How many lipreading problems are directly related to undiagnosed visual acuity problems?

The most important of the receptors for development of speech is hearing. If the teacher is to approach the teaching of speech seriously, it is essential that she understand the process of hearing, be able to interpret an audiogram and other audiologic information, and be able to make judgments about acoustic amplifiers and their relation to defective hearing and speech development. Such knowledge and ability is no longer supplementary to the teacher of speech or just something nice to know if you have the time -- it is an essential part of the job of the complete

teacher of speech. I believe that in the future training of oral teachers of deaf children, courses in such areas of applied audiology will be required and will receive considerable emphasis.

It is essential for the teacher to know how to operate her amplification equipment in the classroom situation. If the children are wearing hearing aids, she should check each of them each morning to see whether they are working properly. How many teachers have their own ear-molds so that they can listen to a child's hearing aid? If the aid is not working properly, the teacher should be able to do such simple trouble-shooting as checking the cords and batteries. How many of you have a battery-tester in your room or school? How many of you know how to tell when a cord is broken? The teacher should have on hand spare batteries and cords so that the child will not be without the use of his aid for that day. I believe she should also have spare hearing aids on hand which can be lent to a child for the day if his is not operating.

The child's ability to hear, as represented by the pure tone audiogram and other audiologic measures, may well determine the emphasis of the kind of external input that is most appropriate. It may tell the teacher what to reasonably expect for the child's eventual speech development, and it will certainly suggest the kind of amplification that is most appropriate for the child. In many classes I have visited, the teacher may not be familiar with the hearing



each child has and may not have access to such information.

The mediator is an area which offers the teacher considerable opportunity for change and development. There are many pre-speech abilities which need to be developed as a later basis for speech itself. In order to receive information from external input, the child must learn to attend to stimuli in general. He must also learn to ignore background stimuli while attending to the foreground stimulus, compare and discriminate different stimuli, and relate stimuli to a categorized group. The child must also learn to retain information and recall it in an appropriate situation. He must also learn to generalize the rules of speech production and sequence of sounds by deducing them from the speech information he receives. Although speech production is directly affected by speech reception, it is not a direct reflection in that the mediator derives rules and attempts to produce speech based on these rules. An example of this ability is in the use of plurals when a child, having heard many words pluralized with a final s, decides that this is the manner in which all words are pluralized. When he applies this to the word foot, he comes out with the word "foots", even though he has never heard this for direct quotation. The process of comparison and discrimination is basic to the ability to monitor his speech by making judgments in relation to the speech of others and to his own standard for production.



The mediator is also responsible for coordination of motor skills; speaking is one of the highest such motor skills to be learned. The teacher may also affect the attitude of the child toward speech production. Since speech will be a difficult skill to learn, it is extremely important that the child feel that the result is worthwhile enough to merit the frustrations and hard work involved in the task. He must also develop the attitude of confidence in his own speech production.

Again in the general senses of teaching speech, teaching to change the mediator begins during the first year of life and carries over into every aspect of a child's education.

It is also possible to begin working on the speech output at a very early age. The ability to attend to and receive stimuli, processed by the mediator and with the attitude to want to be like those around him will stimulate the child to imitate the speech he sees or hears. Even though he may not be able to imitate speech sounds or words directly when he is very young, it may be possible to teach him the imitation of voice production, the manner of speech sound production, and the place of speech sound production. For example, it may be possible to teach a young baby to produce voice and then blow without voice. These two differences in manner are basic to all speech sounds. He may then be able to refine his imitation of manner of production to close the air passage and release an explosion, analogous

to plosive sounds, or to make voice come from either the nasal or oral cavities. He may later be taught to restrict the mouth opening for blowing air so that he produces a sound which is fricative-like in nature. At the same time one can begin to work on place of production with the child learning to feel the closure of lips, the movement of his tongue, and the feel of the tongue against the teeth. A high volume of speech sound output, of whatever kind, should be encouraged so that the child will have experience manipulating his articulators and so that tactile, kinesthetic, and some auditory information will feed back to him.

For convenience in teaching and analyzing speech it may be helpful to the teacher to break speech production down into component parts such as voice production, articulation, and the intonation or patterning aspects of speech. In considering the task of teaching, the teacher may want to think of her work in terms of development, correction, and maintenance of speech output.

Regardless of the mechanical excellence of speech production, the use of this skill is put to will be of great importance to the teacher in managing the speech output. For vocal noises to become speech, there must be associated meaning used in an appropriate situation. In addition to a teacher's management of the speech output in the classroom, there must be opportunity for using speech skills in a variety of meaningful situations in the school, on the playground, at home, and in the community. It is not

sufficient for speech production to be an academic exercise limited to the classroom. To be of value, it must become a primary means of communication and be used in the absence of the teacher.

The teacher is also the manager of the child's speech feedback. Readily available to the child, as a result of his own speech production, will be acoustic information, tactile information, and kinesthetic information. For a hearing impaired child, the use of an amplifier which will permit auditory feedback to the child's own speech is essential if the child is to develop auditory monitoring of his speech output. Also available for feedback is visual information and additional tactile information. Through use of a mirror, the child may learn to visually monitor his speech production. By feeling his production of speech with his own hand, he may learn to monitor voice output and air emission, as well as determine nasality. There are a multitude of ways to convert an auditory or vibratory signal into a visual feedback for the child. This may range from the use of a spectograph or an oscilloscope to the movement of a paper or a candle flame when breath is emitted. It is a challenge to the creativity of the teacher to make such additional feedback information available to the deaf child when he is learning to produce speech. It is also important for the child to learn to develop his own feedback mechanism when no teacher is around. A certain amount of self-direction

ability is necessary for the child to maintain his speech production. A teenage deaf youngster should be aware of the kinds of speech errors he is likely to make in production, and should be able to make self-correction of these errors for a repeated production. Such self-correction involves both development of a standard of how the sound should be produced, and the ability to make appropriate changes.

An additional way in which the teacher can manage the feedback system is in the information fed back to the producing child by observing the response of his production on the listener or observer. Many deaf babies give little vocalization and thus give very little reward to the listening parent. The typical response of the disappointed parent is to reduce his vocal output in the presence of the baby. It is important to counsel the parents concerning the immediate expectation of feedback they will receive from the reacting baby. They must be encouraged to continue a high level of external input to the baby even though low response is immediately fed back to them.

It is also important for the deaf person to learn to judge the success of his production by careful observation of his listener-observer. Very often the hearing listener will not ask to have a misunderstood sentence repeated; by observing the response of the listener, the deaf person should be able to determine whether or not what he has said has been understood. It is also important to counsel the

deaf person concerning the typical response of listeners who are not familiar with deaf speech. They should be warned not to expect the unfamiliar listener to understand them easily the first time they speak, but as the listener becomes more familiar his ability to understand will increase considerably.

We have now dealt in general terms with the total process of learning speech and discussed the ways in which the teacher becomes involved in the management of this process. We will now open this part of the session for questions and discussion.

During the afternoon session, I will deal with a practical suggestion for teaching speech in the classroom. I suggest each of you begin constructing your own notebook of information on speech sounds. No matter whether you are involved in the development of speech sounds in little children or in the correction of speech of older children, regardless of the approach you may have been taught toward developing and correcting speech, there comes a time when a deaf child just cannot seem to develop a particular speech sound or continues to make the same error on a specific speech sound. Then it is important for you to be able to fall back on what you know about the ways of producing or correcting that particular speech sound. I suggest that you use a form similar to that developed by Haycock in his



book, The Teaching of Speech, building up information about each speech sound from your experience, from your reading, and from discussion with other teachers. The organization of the notebook would begin with the individual phonemes, speech sounds, identified by a phonetic or alphabet symbol. The speech sounds should be arranged in some sort of order so that you can find one easily in your notebook when the need arises. Under each phonetic symbol for speech sounds, I suggest you describe the Formation of that sound, ways of Developing that sound for deaf children, the kind of Errors which frequently occur for that sound in the speech of deaf children, and the ways of Correcting such errors. As guides for beginning to fill in such an outline, I suggest you use Haycock's book and the pamphlet written by Caroline Yale, "Formation and Development of Elementary English Sounds." There should be sufficient space left in your notebook so that you can add to the basic outline as you learn more about each sound.

To demonstrate how such an outline may be used, I will describe a speech sound which is a great deal of trouble in the speech of deaf people, the K sound.

### K

The exact formation of the sound will vary with its phonetic environment, depending on the sound that precedes it, the sound that follows it, and whether it is in the beginning, the middle, or at the end of the phrase. Any

description of formation then is a general one, describing the primary characteristics of the sound; it may be easiest to describe the sound in the initial production for our purposes. The formation description will include both the manner and place of production.

#### Formation

The back of the tongue is elevated to the palate and presses against the palate, shutting off the flow of air. Air pressure builds up behind this block for a brief time and then is released with a brief explosion through the oral cavity and between the open lips. The tip of the tongue lies flat on the floor of the mouth.

When listening critically to the speech of a deaf child, it is desirable for the listener to be able to relate what he hears to the formation of the sound produced. He should begin with his standard for the formation of the sound and determine by listening not only that it is incorrectly formed, but how it is being formed in relation to the standard formation described above.

#### Development

Here it is important to have some general guiding principles of speech sound development which may apply to each specific sound. I would suggest that speech sounds be developed in the least structured way possible first; but when this fails, the teacher should be able to go to more structured ways until the sound can be produced. As an outline for increasing structuring, I suggest the following:

1. Spontaneous production
2. Planned stimulation
3. Awareness of error
4. Imitation
5. Demonstration
6. Manipulation.

Second, speech sound development should be attempted first in a large phonetic unit such as a word or a phrase; but when this fails, the teacher should be able to reduce the unit to a short word, a syllable, a speech sound in isolation, or even the placement or manner of production of a speech sound. Third, the speech sound should be imitated from as natural a production as possible; but when this fails, the teacher should begin exaggerating her production slightly until the sound can be produced. Generally speaking, the more structured the means of stimulating the production of a sound, the smaller the phonetic unit in which it is produced, and the less natural the pattern to imitate, the more likely it is that the sound, once developed, will have errors in its production.

#### Development of the K sound:

##### Imitation of the teacher's production.

Let the child see the movement of the back of the tongue up against the palate with the mouth open, close the mouth until the lips are slightly parted, let the child feel the explosion of air on his hand.

##### By analogy from the production of P and T.

Show the similar manner of production of P, T, and K by having the child feel the explosion or observe a piece of paper move with the sudden emission of breath. Show the placement of the tongue for the K position.

If the K is very difficult to develop in a particular child, the K - I analogy can be pushed further. When the child has developed a satisfactory I, ask him to produce this sound while holding down the tip of his tongue with a tongue blade or a finger. Associate the plosive produced with the K symbol and eventually have the child produce it without holding his tongue tip.

If the K is very difficult to develop but the I has been developed, have the child make a I sound with the back of his tongue against the upper teeth, and associate the sound produced with the K symbol. Gradually encourage him to make this sound with the contact of the back of the tongue and the roof of the mouth moving farther to the back of the mouth.

By imitation of the teacher's production in association with other sounds.

Have the child feel the teacher's lips during production of the ee (as in "bee") sound, and the sound with a K. Have the child attempt to imitate this syllable. The position for the ee tends to raise the tongue toward the position for the K.

### Errors

I will deal with three errors that deaf people commonly make in producing the K sound, the lack of contact of the tongue and palate, too much pressure in the explosion, and adding voice to the production. Beside each error I will place some means of correcting the error.

#### Errors

Lack of contact of the tongue and palate.

#### Corrections

Demonstrate pressure and release of the P and I sounds. Demonstrate pressure and release one of his hands against the other.

If a child has the ng sound, develop a pressure K from this closure with a prolonged ng sound ending in a K.

### Errors

Too much pressure and explosion.

Adding of voice to the production.

### Corrections

Demonstrate the difference between the undesirable great amount of pressure and the desirable lesser amount of pressure by having the child feel the teacher's production with the hand.

Make a series of K sounds in rapid sequence such as kkkkkkkkkk; in doing this the child will reduce pressure on each sound in order to produce more sounds.

Make a series of P, I, K sounds to demonstrate that the explosion of K is similar to the other two sounds. If the three sounds are produced in rapid sequence over and over again, the amount of pressure on each one will be reduced.

Let the child feel the reduced pressure of the voiced correlate of the K sound along with the desirable pressure of the correctly produced sound.

Add duration to the production of the voiced K sound. This may be accomplished by writing in a small h sound after the K is written for the child.

Demonstrate by analogy with the P and I sounds in a series repeated again and again.



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Session III

"Psychoneurologic Problems in Hearing Impaired Children - Fact or Fallacy?"

Frank Kleffner, Ph.D.  
Director of Speech Pathology and Correction  
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St. Louis, Missouri

"Programming 8mm Film for Teaching Speech Reading for the Deaf"

Robert Stepp, Ph.D.  
Project Director  
Teachers College, Dept. of Educational Administration  
University of Nebraska  
Lincoln, Nebraska

"Mediated Systems for Teaching the Deaf"

Robert Stepp, Ph.D.

"Current Research in the Area of the Hearing-Handicapped Child"

Edgar Lowell, Ph.D.  
Administrator  
John Tracy Clinic  
Los Angeles, California  
(Oral presentation; no paper submitted)

"Teaching Reading to Disadvantaged Children Who Also are Deaf"

Millard Black, M.S.  
Elementary Reading Supervisor  
Curriculum Branch  
Los Angeles City Schools  
Los Angeles, California

"The Auditory Channel in the Education of Deaf Children"

Robert Frisina, Ph.D.  
Dean, Graduate School  
Gallaudet College  
Washington, D. C.

"Problems in Psychological Assessment of Deaf Ability and Achievement"

George Guilfoyle, Ph.D.  
Research Assistant  
Lexington School for the Deaf  
New York City, New York  
(Oral presentation; no paper submitted)

## PSYCHONEUROLOGIC LEARNING PROBLEMS - FACT OR FALLACY

Frank Kleffner

Among hearing impaired children there always are some who do not succeed in learning oral language through the training experiences otherwise considered appropriate in terms of the observed impairment. More accurately perhaps, I should not say that they fail to learn but rather that they encounter more than the usual difficulty.

Some contemporary linguistic scholars have suggested that the human possesses an inherent or inborn capacity to develop language even in spite of serious interfering factors. From this point of view, we might propose that those hearing impaired children who seem to be failing in learning language either:

- (1) Lack this inborn capacity (or some part of it)
- (2) This capacity has been inhibited or interfered with.

In considering the first of these, that is, that they lack the capacity, we seek explanation for and understanding of their problems on the study of:

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Auditory abilities  
Perception abilities  
Intellectual abilities  
Neurophysiologic factors

We have learned that these are complex topics and that it is often difficult to convert our findings into strategies for language instruction.

In considering the second, that is, that the inborn capacity to learn language has been inhibited or interfered with, I feel it is fruitful for us to seek insight and understanding of the problem through study of the child as a learner and through study of language as a process.

Here our findings might be much more readily converted into remedial or instructional action. If we but consider the complexity of language, we can I think, appreciate how, for the hearing impaired child, the already difficult task of learning language can be compounded further.

Consider, for example, the possible effects of two clinical practices which could, in my opinion, compound the learning of language for hearing impaired children.

The first is the failure to take into account the effects of hearing impairment. This may result from ignorance or insensitivity to these effects, or it may result from an explaining away or ruling out or overshadowing of observed hearing impairment by virtue of inferences about the child's brain (which may even suggest that observations of hearing ability should be disregarded). After all, don't we read that test results on children with "central" impairment are

"unreliable", "inconsistent" and "fail to give a true picture." We often hear "he has a hearing loss, but that's not his real problem." Yet when this becomes translated into action, it often becomes synonymous with "he has no hearing loss."

The second example of a clinical practice which can compound the child's problem is in auditory training. In this practice, the child's impairment of hearing is recognized. Auditory training is provided but sometimes in a fashion which limits the training stimulation too much to the auditory and thus fails to provide the auditory stimulation within a context rich in experience activity and rich in communicative activity. Such auditory training (limited as above) is impoverished in the opportunities and cues from which the child can find the rules which govern meaning and syntax.

These are examples of only 2 of the many ways in which the learning of language can be compounded for the child. Serious study of the language process in all its complexity will, I believe, be a fruitful source of hypotheses regarding language deficiency.

The language behavior of the hearing impaired child who has encountered more than the usual difficulty in learning language ranges from little or no comprehension and use of language to various combinations of seemingly peculiar and uneven development of language. Some examples are:



The child may disregard, ignore or even avoid, if he can, verbal communication interaction.

He may be able to understand and use naming words but not syntax.

He may understand language up to expected levels but have little or no ability to formulate and express.

He may do illogical or random guessing.

Different language modalities may be independent of each other or non-supportive of each other.

He may prefer to rely on non-verbal cues correlated (but poorly) with verbal ones as he tries to understand language.

These similar behaviors suggest that the child has not found the underlying and organizing principles of syntax and inter-modality relations. More specifically perhaps, this child may have concluded for some one modality, combination of modalities or for communication in general, that there are no organizing principles -- that there is no system. More likely, though, he infers wrong or only partly right organizing principles. Any child presenting language deficiency probably presents problems of this nature in addition to or perhaps secondary to whatever other causes there appear to be for his deficiency.

Our clinical tools in dealing with the language deficient child must be concerned with learning (which is what we want the child to do) and language (which is what we want the child to learn). In teaching the child for whom the learning of language has been compounded, we must deal with him as a learner not only in terms of his intellectual potential but also in terms of his intellectual competence; that

is, the utilization he makes of his potential -- the strategies of acquisition he uses.

In teaching him language, we must be prepared to deal with language as a total system. To quote Noam Chomsky, "... we can conclude that the speaker - hearer's knowledge of his language must be represented as a system of rules, and that his linguistic competence lies precisely in his ability to arrange these rules in new and previously untried combinations in forming and interpreting sentences." Thus, we want to teach him how to be an effective learner, and we want to lead him to mastery of the underlying rules of language communication. The kind of learning strategies we train him to use will influence the success we have in teaching him language. The progress he makes in language will be reflected in the kind of learning strategies he uses.

Thus far, I have presented a point of view -- a rationale and some principles. I shall now describe and explain certain fundamental features of a language training procedure as an illustration of one application of knowledge about learning and knowledge about language to the task of language instruction. This is the procedure we use at Central Institute for teaching hearing impaired children for whom the problems of learning of language appear to be additionally compounded.

1) Our procedures focus on each and all aspects of total language function. There is training in hearing, in

speech reading, in understanding spoken language, in reading, in speaking and in writing.

2) The procedures emphasize analytic approaches. This provides for manipulation of small increments of skill and content and small increments of stimulus and response which increases the probability of the identification and management of specific confusions or gaps in the learning. An analytic approach also allows for optimal use of prompts and reinforcement in shaping the learner's performance.

3) There is provision for training the child to respond to various language stimuli and to respond with various responses. Activities also are provided for the child to use language to stimulate others as well as to use language as response.

4) There is a focus on the development of fundamental intermodality relations. For example, every instructional sequence includes activities in which:

- a. The item to be taught is spoken as well as written.
- b. Writing is used as stimulus and as response.
- c. Spoken and written responses are elicited from the child.
- d. Each sequence includes activities in which attention is focused on each sensory, motor and language modality separately.
- e. Attention is given systematically to various combinations of modalities in various combinations of stimulus and response.

5) Finally overall, the content and content sequences reflect attention to certain linguistic features.

We teach sounds - The phonemic repertoire-phonologic.

We teach words and word functions-morphologic.

We must deal with meaning and multiple meaning - semantic (word classes and class relations).

We focus on syntax.

We attempt to exploit the possibilities of attention to intonation features as they relate to syntax and meaning and speech intelligibility.

#### In Summary.

Our aims throughout are first to assist the learner in developing effective cognitive strategies for learning language, and second, to teach the learner how language works.

The extent to which we teach the child mastery of the functions of language is by far more important than the language content we teach him.

One final point, our procedures as they reflect the principles discussed, do appear to have an advantage of singular importance. They apparently provide a sufficiently broad coverage of the problems of learning language to be appropriate for a variety of differently caused failures in the learning of language.

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## PROGRAMMING 8MM FILMS TO TEACH THE DEAF

Robert E. Stepp

### Introduction.

The term "programming" as used in the title incorporates many elements of instructional planning and execution. Perhaps the suggestion of several alternate titles, each delineating a segment of the topic, may serve to clarify the intent of this paper.

"Using 8mm Films to Teach the Deaf" is the basic assumption. This film medium is uniquely appropriate for transmitting both visual and auditory messages to the acoustically handicapped person. The impact of the moving image and its efficiency as a vehicle for receptive language are two characteristics associated with the importance of the film medium as a teaching resource. In addition, 8mm offers the advantages of short instructional sequences, film loops, cartridge load projectors, and self-operated programs. It is only a question of time, and a relatively short period at that, until extensive use will be made of this particular film size.

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"Producing 8mm Films to Teach the Deaf" is also implied in the title of this paper. Existing films, as excellent as they may be, are not programmed to teach the deaf.

Therefore, another assumption is made that these films will be a new type and will have to be produced. Since the need is so great and the subject areas to be taught are so diverse, schools of the deaf will have to become actively involved in motion picture production -- not necessarily on a grand scale with a studio and a professional crew, but involved to the degree that simple, locally-produced 8mm productions are an integral part of the instructional program.

"Designing 8mm Films to Teach the Deaf" is the critical element inherent in the main title. These new productions should not follow the format employed in a very high percentage of commercially produced films, although educational films have improved immeasurably during the past five years. The best of current films functions as a motivational information machine which convey realistically, factually, and often beautifully, the concepts being presented. There are numerous educational films that one could classify as "film classics." Nevertheless, in most instances, the film treats the viewer as an interested, but passive, observer. If films are to be programmed or are to be the basic element in a unit of instruction they must involve the viewer to the point that he participates actively

in the learning situation. Although there is no question in the author's mind but that 8mm films will become a valuable resource in the hands of the teacher, he is more concerned, at the moment, with the value of this resource when placed in the hands of the student. Eight-millimeter films can be the programming medium for a form of self-instruction. If designed properly, they can present information, review material, question the student, elicit responses, confirm the correctness of the responses, and provide this instruction to the student at the most advantageous time as well as at the learner's rate of progress.

The availability of such materials alters the role of the student in the learning process and the role of the teacher in the instructional process. The student's learning procedures change from being highly dependent responses to activities that are more independent. The teacher changes from the role of visible narrator-presenter to that of interpretive tutor. "Programming 8mm Films to Teach the Deaf" includes in its meaning the identification of learning objectives for a specific unit of instruction, the determination of learning activities required of the student, the design of the instruction material to assist in the accomplishment of these objectives, the production of materials to elicit these responses, the "packaging" of these items into study kits of units, and the utilization of these resources in a learning environment conducive to optimum learning input.

Pre-planning of the total curriculum precedes the planning of a single film. The films do not supplement or support an idea, they are designed to teach the concept, present the information, develop the skill, or convey the content being studied.

For the past several years a number of research studies have been under way to explore the potential of 8mm films in education. The pioneer efforts in this field were conducted by Dr. Louis Forsdale, Principal Investigator, Project in Educational Communication, Teachers College, Columbia University, New York City. Dr. Forsdale and his staff have been very creative in their design of 8mm films to perform a teaching function. Most of these films are programmed to present content in a logical, sequential order and have been produced to require a form of overt response from the viewer (learner). His work and his thoughts regarding the contribution of 8mm films to educational development of students are revealed in a chapter entitled "8mm Motion Pictures in Education: Incipient Innovation," which is included in the book, Innovation in Education, edited by Matthew B. Miles and released by the Bureau of Publications, Teachers College, Columbia University. Another publication from the same agency is the book entitled 8mm Sound Film and Education, edited by Dr. Louis Forsdale.

In regard to the application of 8mm films in deaf education, two studies were being conducted simultaneously



in two different locations. Reference is made to the work of Dr. Frank B. Withrow, Director of Research and Clinical Services, Illinois School for the Deaf, Jacksonville, Illinois, and the work of the author at the University of Nebraska. Dr. Withrow has produced more than two hundred films which are designed to provide speechreading practice to the deaf child. These films are designed so that the student can speechread a person pronouncing a carefully selected vocabulary list. After viewing the stimulus, the projector is stopped by the learner; the child responds by writing the word or chooses a picture which depicts the word; turns on the projector to receive the confirmation or verification that his response is correct. This procedure is repeated throughout the series. The set of films includes word drills in categories, such as nouns, verbs, adjectives; groups, such as numbers, colors, etc.; and sequences of phrases and sentences. Dr. Withrow has produced an excellent set of films to assist in the development of a basic speechreading vocabulary. These particular films are silent and were intended for use in the Technicolor 8mm cartridge-load projector.

Other work in this area that is worthy of note are the films produced by Mrs. Virginia McKinney, Photo-School Films, Inc., Los Angeles, California, and Dr. Ray Jones, Project Director, Leadership Training in the Area of the Deaf, San Fernando Valley State College, Northridge, California. Mrs. McKinney has been creating 8mm films to teach



speechreading to adults. These films are sound films and are planned to use in the Fairchild Mark IV cartridge-load projector. Mrs. McKinney reports excellent results with this instructional procedure. Dr. Ray Jones has done experimental work in designing a way to accelerate the instruction of fingerspelling. His films are silent and planned for the Technicolor projector. Like the other films, these are intended to be a form of self-instruction.

During the past couple of years a study was conducted at Prescott School in Lincoln, Nebraska, in which 8mm films were employed to provide speechreading practice for lower-elementary deaf children. These films were programmed for use in a self-operational setting and were employed as a type of teacher-guided form of independent study for these children. These films are not presented as models because they do not contain all the elements that are usually associated as essential characteristics of programmed learning. They do represent an attempt to "package" speechreading practice for the deaf child so that he can proceed at his learning convenience without being so dependent on an adult tutor, teacher, or parent.

A summary of this research is presented as a basis for discussion.

### Research Summary\*

Is it feasible to program speechreading practice as an independent study exercise for deaf children? Is there merit in pursuing a plan which teaches children, on a self-study basis, a selected vocabulary prior to its use in an instructional unit taught by the teacher? How can we assist the deaf child in assuming a greater degree of responsibility for his own education?

These questions and others were under consideration in a NDEA, Title VII, research project recently completed at the University of Nebraska. The project was entitled, "A Feasibility Study to Investigate the Instrumentation, Establishment, and Operation of a Learning Laboratory for Hard-of-Hearing Children," and began in June, 1963. The study was planned and conducted in three phases: (1) Organization and Production, June 1963 - April 1964; (2) Utilization and Evaluation, February 1964 - December 1964; and (3) Final Report Preparation, January 1965 - December 1965. Twenty-five sound, color, 8mm films were designed and produced as the basic instructional media. The utilization phase was conducted in the lower elementary classroom, Hard of Hearing Unit, Prescott School, Lincoln Public Schools, Lincoln, Nebraska. The final report contains an overview of the project, a review of the findings, and supporting evidence in the form of both case studies and documentary observation films.

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\*Adapted from an article to be published in Volta Review.

### Rationale.

The normal hearing child expends a large portion of his educational effort in the development of language skills. Generally, these skills include reading, writing, listening, and speaking. For the deaf child, the auditory skill of listening is replaced in part by the visual skill of speechreading, fingerspelling, or a combination of the two methods. These skills, like all language skills, require considerable study and practice. This project was limited to the problem of providing speechreading practice to the acoustically handicapped child.

The problems associated with acquiring a proficiency in the art of speechreading are well known to parents and teachers of the deaf. The invisible sounds, the confusion of homophenous words, the peculiarities of speech habits, the careless articulation of some speakers, and the idiomatic expressions of our language make speechreading a very difficult form of communicative reception. Traditionally, speechreading practice has depended on the direct effort of someone (teacher, parent, fellow student, or friend) to be the visible narrator or the source of transmission. If speechreading requires lips to read and facial expressions to interpret, then someone must be available as the subject or no practice can take place. Nor does it suffice for the deaf student to depend on the incidental conversation of people among whom he lives for speechreading practice.

People turn their heads while talking, make distracting gestures, raise their hands to their mouths, and often speak carelessly. The experienced, skillful speechreader may be able to cope with some of these impediments, but the beginner cannot. He needs intensive, carefully structured, face-to-face practice with some one who can assume the role of teacher. The fact is, however, that there are not enough people available to perform this function or enough hours in the day to develop the extensive vocabulary that a deaf child needs today. This makes the deaf student extremely dependent, and requires many hours of devoted attention from his helper unless some means can be found to simulate these learning experiences.

The motion picture, through its form of realism, its power of simulation, and its own special language of photography, is one medium which could become the vehicle for speechreading development and reinforcement. Particularly well-suited to this approach is the 8mm film in cartridges. A library of 8mm educational films, all designed with a speechreading narration and as plentiful as books, could be a visual source for the acquisition of information and a means of partial compensation for the deaf child's hearing loss. Not only would educational scope and content offered the deaf be broadened, but the adoption of such a system would allow a large portion of this study to be by the child himself on an independent basis.

### Population

Ten children in the lower elementary and middle elementary classrooms of the Hard of Hearing Unit, Prescott School, Lincoln Public School, Lincoln, Nebraska, comprised the experimental population for this feasibility study. The ages ranged from five to eight years of age. This distribution was as follows: three children age 5+, two children age 6+, four children 7+, and one child age 8+.

The hearing loss of these children could be classified at three levels: (1) hard of hearing (35-60 db loss across speech range), (2) severely deaf (80-95 db loss across speech range), and (3) profoundly deaf (95 db no response across speech range). The distribution of hearing loss was as follows: one child hard of hearing, four children severely deaf, and five children profoundly deaf.

The school information records indicated mental ability classifications ranging from low average to superior intelligence. This distribution was as follows: one child classified as low average, three children as average, four children as above average, and two children as superior when compared with other deaf children their age.

Two of the children were multiply handicapped with the additional problem of cerebral palsy.

### Laboratory Arrangement.

The speechreading laboratory at Prescott School consisted of three study carrels, each containing a Fairchild



Mark IV 8mm motion picture projector and a set of headphones.

The carrels were modified language laboratory booths extended to 40 inches in width. The projectors were in self-contained cabinets which were designed so that the screen was an integral part of the unit. The headphones were AV Electronics Headmaster 95 and had a short boom microphone as well as the usual rubber-capped ear pieces. This arrangement permitted the evaluator to monitor the student's verbal comments as well as witness his behavioral reactions. To capitalize on whatever residual hearing the student might have, he was allowed to wear the amplified headphones while studying the filmed lessons; but to measure his progress, all filmed tests were taken without the aid of sound. Adjoining the study carrels was a 7'x7' observation where the researcher, evaluator, and cameraman recorded the reactions of the students to this method of teaching. One-way mirrors provided firsthand observation without the child's being aware that the research staff was present. The three carrels and the observation room were installed in the lower elementary classrooms. This facility became one of the four work-study stations in the room. The other three were: student's desks, small group circle, and auditory training area. This arrangement permitted at least three instructional functions to be conducted simultaneously with various students - seat work, auditory training, and filmed speechreading lessons, or any combination of activities - that the classroom teacher was directing one, and the other two were forms of independent study.

The speechreading laboratory was not designed to replace the teacher, but was planned as an extension of the teacher. It was then possible for the teacher to assign the student to a speechreading lesson for him to practice by himself. She would tell the student what film or films to see and how many times to study each one. The child would take the film, proceed to the assigned booth, load and operate the projector, and, after studying the film, return it to the teacher or its assigned space on a shelf. The 8mm film in the cartridge is actually a film loop -- the end being spliced to the beginning. The film never has to be rewound and the child can see any film as many times as he wishes or is instructed to do so.

#### Instructional Materials.

The film library for this project consisted of twenty-five speechreading films designed specifically to test the feasibility of a laboratory procedure.\* The films were divided into three series: (1) single-word emphasis approach, (2) associated-word emphasis approach, and (3) multiple-word emphasis approach. The term "emphasis" is used here to mean that, although certain words were stressed, other words in carrier phrases and supporting sentences were also included

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\*Produced for this project by Photographic Productions, University of Nebraska.

in the vocabulary.

Single-Word-Emphasis Approach: The initial series dealt with the lipreading of a four-word vocabulary and the directions for identifying the four objects which the words represented. Although the four words were relatively simple, "car-ball-doll-tractor," the test for feasibility was to determine not only if the child could distinguish between the four words spoken on film, but whether or not he could follow directions in the placement of the objects in the booth and would respond to the film teacher by pointing to the proper object. Once the objects were in place, the film test became a lipreading drill over the four items. At the close of the exercise, the film teacher instructed the child to return the objects in a prescribed sequence to a shelf in the booth. In the end-of-unit test, the film teacher manipulated the same identical objects in the film that the child was asked to handle in the booth. Also in the plan of this film, the teacher, after waiting a brief period for the child to respond, would confirm the proper response by pointing to the object in front of her. This film was a form of visual programming to test and instruct at the same time. The average proportion of correct responses for this end-of-unit test was 95%. It probably should be restated at this point that the children were not allowed to wear the headsets or receive any form of sound reinforcement during the test phase of the project.

One month later, a second test over the same four items was given. This time the film teacher did not manipulate the objects in the film and the student had to lipread all of the directions as to placement of the objects and the identification of the items. The average response from this test situation was 80% correct. One child, Case Study IX, has extreme difficulty in decoding any form of lipreading. Excluding this case, the average was 89% correct. The same film test was administered four months later. Again the group average was 80% correct and without Case Study IX the results showed a slight drop to 88% correct. The final test in this series was given six months after the completion of the unit and one month after the test just discussed. Although this film test was over the same four-word vocabulary, the film teacher was a stranger to the students. No visual or auditory cues were provided. The children were required to lipread the placement and identification of the objects. In this test six of the nine respondents had perfect scores. The average was 88% correct and, excluding Case Study IX, 94%.

Associated-Word Approach: The second series of films dealt with the concept of left and right. The instructional idea was to design a series of four teaching films and two testing films which would promote an understanding of the left and right relationship while teaching the child to lipread the associated vocabulary. All four of the instructional films required intermittent overt responses from the viewer.



These films had 8, 10, 6, and 12 responses per film and the average proportion of correct responses respectively were 74%, 74%, 75%, and 76%. The end-of-unit test required the child to respond to the film teacher by indicating the proper answer on a light box. Two push buttons controlled the lighting for the words "left" and "right". If the child could lipread such questions as "Which one is this?" (left or right mitten, for example) or "Which way did it go?", he would indicate the proper response by pushing the button lighting the correct word. A student actor in the film confirmed the answer by depressing a similar button and lighting the correct response. This film was 10 minutes in length and contained 31 response requests. The average percentage of correct responses was 88%. In a post-test, using the same film four months later, the group averaged 86% correct.

Prior to the presentation of this film series only two children were able to indicate any understanding of the left-right relationship. At the conclusion of the study all children were able quickly to identify left and right relationships to their body; objects such as mittens, shoes, proper table setting of knife, fork, spoon; and directions of movement.

**Multiple-Word Approach:** The third series of films dealt with the development of lipreading vocabulary for a unit study. The unit was on Foods, and a film was produced



for each of the three basic meals, breakfast, lunch, and dinner. These films introduced the lipreading words at a much faster rate and in larger groupings than in the previous series. The instructional scene was a table setting, at which the film teacher proceeded to serve the viewer's meal. In the process of serving breakfast 10 words for foods were introduced, for lunch 10 words were used, and for dinner 11 words were presented. A composite list of 27 words for food items became the working vocabulary for this series. The three presentation films (breakfast, lunch, and dinner) and the review film (cafeteria style) required no responses other than direct observation. The lipreading test film for this series was a multiple-choice pictorial examination. A booklet was designed which had four full-color pictures of food items per page and contained twenty-one pages. On instructions from the film teacher, the child was to open his booklet; lipread the food word; draw a circle around his response; and turn to the next page. Fourteen of the test pages had single food items in each of the four picture frames from which the child made his choice. The last seven pages had two food items in each of the four picture frames which made the lipreading more difficult. A self-administered film test, using the foods booklet, was given to the children prior to the use of the teaching films. In this pre-test the children's average group response was 64% correct for the single words and 50% for the paired words for an overall average of

60%. The same film test was given at the end of the filmed unit, with the results being 74% correct for single words, 57% for paired words, and a group average of 63%. Two weeks later another version of the film test, given by a different film teacher from the one who taught the unit, was administered. In this post-test, the children responded 69% right on the single words, 50% on the paired words, for an average of 63%. The apparent low scores on this series, as compared with the other two film series, may have resulted from the increased complexity of the films, the mode of presentation, the introduction of an extensive vocabulary, and the mechanical fact that the film teacher did not wait for a slow response, but proceeded at a constant rate. It is interesting to consider these results in comparison to an informal test, without films, but using the foods booklet, given by the classroom teacher before the start of this phase of the study. Only one child was able to lipread all the words correctly. Five other children could lipread 85% or better. The group average was 77%. In a similar test conducted by the classroom teacher at the conclusion of the study, five children were able to lipread 100% of the words, three children achieved 85% or better, and the group average was 86%. The resultant gain gives evidence that the students' lipreading ability of these words did improve.

#### Participation vs Observation.

Successful teaching often depends on the degree of

involvement required of the learner. Usually motion pictures, even with their pictorial realism, only expect the viewer to be an observer. The films in this study were planned with the viewer being a participant rather than an observer. The student watching the film became the learner and in this role was required to assume an active part in this learning experience. The filmed lessons were structured to elicit from the student various types of overt responses such as gestures, manipulative actions, and identification marks. His responses to the filmed materials was a significant aspect of the study.

The productions were designed to give the illusion that the viewer was part of the scene. The camera was located where the learner's eyes would be in a normal tutorial situation and this position gave the impression to the learner that the teacher was speaking directly to him. The two film teachers' mannerisms, facial expressions, and eye contact with the camera were so real that the student soon forgot that the teacher was on film. On several occasions the students attempted to touch her face. The students would also talk back to the film teachers in a very normal exchange of dialogue. In one of the foods films the film teacher asked if the learner wanted salt on his potatoes. He replied "no". The teacher did salt the potatoes a second time in the film and the boy shouted a strong "no" again. He had completely forgotten the fact that he was watching a

filmed lesson. In the left and right series all shots were taken from the learner's viewpoint. All movements, all positions, and all statements were in terms of the learner's left and right. The film teacher was only a visible narrator. The scene for the foods films was a table arrangement with a place-setting in the foreground and the teacher on the opposite side of the table. The place-setting was so planned that the plate, knife, fork, spoon, glass, etc., were all oriented to the viewer. Again the visual impression was that the film teacher was serving the learner's meal. The inclusion of the learner to the point of actual involvement is one important element in film production design if the filmed lesson is to be the basic instructional medium for independent study.

#### Reinforcement and Confirmation.

Another important element in tutorial-style films is built-in reinforcement and confirmation of the learner's progress. So often in film study, and many other forms of teaching, the student does not know whether his response or his understanding is correct or not. If we are to utilize self-administered study techniques, some self-check system of evaluation must be a part of the basic design. In two of the series, response films were planned which required an overt act on the part of the learner and a follow-up confirmation by the film teacher. A four-word vocabulary



of "car-ball-doll-tractor" was selected for the single-word emphasis experiment. Toys, representing these objects, were placed in clear plastic containers and located on a shelf in the study carrel. The identical objects were also used in the filmed lesson. The film teacher would select one of the toys and place it in front of her. She would instruct the child to do the same thing. The child, if he could speechread the instructions, would reach for the toy and place it in front of him. The toys in the carrel were lined up to match the toys in the film. The teacher then proceeded to drill the child on the vocabulary by saying, "Show me the car." The child would point to the toy car and after a slight pause she would point to the toy car and say, "This is the car." The child received both visual and verbal confirmation of the correctness of his response.

A different approach was used in the left and right series. Each filmed lesson was planned to include some participation and some form of confirmation. The simplest and probably most natural procedure was the inclusion of a child's pair of hands in the lower portion of the film. The hands were there for three purposes: (1) hopefully to be an extension of the learner himself into the scene, (2) to serve as a basis for the viewer's left and right orientation, and (3) to provide a signal to the teacher as to the correctness of his own response. When the film teacher asked the learner to indicate his understanding by raising either his



right or left hand, he could check his response by the delayed but confirming action of the small hands in the film. Another technique employed in this series was the use of a box which was designed so that the word "left" or "right" would light up when the proper button was pushed. The box was placed between the child and the projector so that he could respond without taking his eyes off the screen. A similar arrangement was also built into a special table for the film teacher to use in the filmed lesson. When she said, "Which way did it go?" or "Which mitten is this?" -- and then "Push the button," the child would indicate his choice by the lighted word. After a slight delay, the pair of hands in the film would reach up, push the proper button, and light the correct word. Again the learner received confirmation as to the correctness of his response.

For purposes of the study, the confirmation element was not included in the foods series. In the opinion of the researcher and from evidence gathered in the study, some form of confirmation is essential in filmed lessons designed to teach skills in an independent study environment. The food films are currently being revised to include reinforcement.

#### Evaluation and Documentation.

A professional evaluator was employed to collect data, make direct observations, maintain records, and prepare a case study of each child's reaction to this method

of speechreading practice. The evaluator, observing through the one-way mirrors in the adjoining room, kept daily records of the progress of the study. A special tabulation form was designed upon which these evaluations could be recorded. A graphic record was maintained of the degree of interest and the duration of attention span as each child watched the filmed lesson. Another part of the form permitted the evaluator to graph the rate of response and the correctness of the response in those films which required an overt reaction from the student. The case studies that resulted from these evaluations also contain an audiogram, educational information, and a personal profile resume of each student. This analysis provides a basis upon which a teacher might predict how her students would react to this method of teaching.

Visual evidence was collected in the form of 16mm black and white, sound observation films. The student was photographed through the one-way mirror in a candid film recording of his actions. Twenty-seven of these observation films comprise an important segment of the final report. The unique feature of the films is a split screen format which shows the film teacher on the left half of the screen and the student in the study carrel reacting to the filmed lesson on the right half of the screen. The audience watching these observation films can study the stimulus (film teacher) and the response (student) and make judgments as to

the effectiveness of the speechreading films as a means of providing practice and as a means of eliciting responses.

### Conclusion.

The evidence compiled from this feasibility study supports the position that acoustically handicapped elementary school children can assume some degree of responsibility for their own instruction in a self-operational learning laboratory environment. The conduct of the children in the classroom, their repeated expression of satisfaction from their experiences in the laboratory, and their educational growth gave further proof to this supposition. The carrels proved to be an ideal facility for the independent study and practice of lipreading by the students.

The laboratory arrangement and the selection of a cartridge load projector as the teaching device provided a simplicity of operation which required very little supervision by the classroom teacher. The children in this project had no difficulty in loading and operating the Fairchild Mark IV 8mm sound motion picture projector. Operational tests with younger children indicated that four years is probably the earliest age at which the child can be expected to operate his own equipment. The self-operational aspects of the instructional system allowed the teacher more time for individual tutoring and other teaching functions.

The 8mm motion picture was most effective as the instructional medium. The study proved repeatedly that it is

possible to establish rapport between a film teacher and an acoustically handicapped student similar to the relationship that exists in a face-to-face tutoring situation. As to the design of the film, results from this study indicate that the film lessons which were planned to teach a concept were superior to the other experimental films. It was also found that the film organizational structure of presentation-review-response was a logical instructional pattern, but that the series which incorporated all three of these methods in each film was superior to the series in which these methods were treated as separate films.

The attention span of the child to the filmed lessons varied with the length of the films (4-12 minutes), but showed little evidence of distraction when the content was presented in a manner to involve the viewer (learner). The average interest level was identified as "prolonged viewing" which was a four-point rating on a five-point scale. Only occasional drops in interest were noticed when the film showings were spaced a day apart. Loss in interest was evident when the same film was repeated two or more times at one study session.

The study also gave support to the position that the principles of programmed learning can be adapted to visual media as they have been successfully employed with printed media. Visual programming techniques of sequence and confirmation provided meaningful reinforcement to the learning exper-

ence. The planning of the visual confirmation, informing the child whether he was right or wrong as he progresses, was considered to be an essential element in film production design. The films elicited from the students meaningful overt responses and were similar (in some cases identical) to the typical responses given to the regular classroom teacher. Active participation in the filmed learning experience was found to be invaluable in the progress of the child. In addition, isolation in the booth, the production of the instructional films from learner's viewpoint, the apparent closeness of the face-to-face relationship between film teacher and student, gave an intimacy of instruction which provided realism to the experience.

#### Problem and Challenge.

Reading and writing are language skills which assume permanent shape as printed and written materials and in this form can be studied repeatedly and at the learner's convenience. Conversely, listening and speaking are transitory forms which fade away after being initiated. Speechreading falls into the second category and has no permanence for prolonged study.

If we would attempt to teach reading in a manner similar to our present methods of teaching speechreading, it would be necessary for the learner to wait for someone to write his reading lesson. To make the analogy reflect the



true problem, the student would have to read the material as it was being written and the writing should fade away after being written as speech does after being spoken. This laborious method would make the development of reading skills a dependent learning task.

One of the language skills, listening, has some of the problems identified with speechreading, although there are many differences between auditory perception and visual perception as avenues for receptive communication. Yet, listening, to be practiced, to be studied, and to be a form of receptive language, must be converted into a fixed form that can be repeated at the learner's convenience. The tape recorded with magnetic tape has provided this flexibility of instruction. Recorded sounds can now be studied indefinitely. The language laboratory is an example of the technological development of this idea into a system for teaching modern language.

The technology is already available to establish the visual laboratory for the instruction and practice of speechreading. Films and video tape recordings are both visual media which could function as the basic instructional material. At present, the 8mm, sound, color film in cartridges is a logical choice because the child can handle the materials, operate his own equipment, and proceed with his study without constant supervision from his teacher. A learning laboratory, employing film media, could not only assist in the

development of a speechreading vocabulary and permit repeated practice, but it could also be used for those lessons which require visual explanations. (Even these explanations could be given by a visible narrator in the film.) It could be used for filmed reference material with speechreading narrative (the child selects a film cartridge the way he selects books), for daily assignments given by the teacher (the idea of using filmed material as we do workbooks), and for auditory training with the sound track being the important element (the sound film with its various means of visual cueing may be an excellent medium for developing residual hearing).

A learning laboratory uniquely equipped to communicate with the acoustically handicapped offers a great opportunity to students -- and an even greater challenge to educators of the deaf.

#### Postscript.

This challenge includes the use of 8mm films not only in language development but also in the presentation and study of subject matter. Is it necessary today for the deaf child to lag behind his peers in his educational growth? Have we as educators designed instructional materials to compensate for his handicap and have we provided these resources to accelerate his learning rate? Do we depend too much on actual experience when simulation may be more educational,

understandable, and practical? Have our present methods of developing expressive language delayed the educational growth of the deaf child and thereby hindered the achievement of this our highest goal?

Can you envision a library of 8mm films in cartridges as comprehensive and accessible as books? These films would permit the deaf student of all ages to acquire knowledge by the identical language (speechreading, fingerspelling, reading, etc.) that he normally uses for daily reception of someone's thoughts.

There is no limit to the information that could be communicated about science topics, demonstrations, and experiments. Social studies is an audiovisual subject in its own right and could be presented in a sequential manner to allow for comprehension, reflection of ideas, and interpretation of historical events. Although some aspects of mathematics are usually easier to teach than some concepts in other subjects, we don't know the rate of advancement these students might make if the study materials were specifically designed to present these topics in a logical, independent process to the deaf person. The film medium is a natural one for presenting mathematical processes and manipulations. Language arts will require the most creative thought from the educator. Normal progression of language, vocabulary development, multiple-word meanings, spelling, and storytelling are a few of the elements of language arts that

could be developed in film form.

As was implied in the introduction of this paper, such utilization of films in the learning process requires a new understanding of the role of the film medium, a new structure of film design, and a new outline or organization of subject content. Even more critical is the new role of the learner. Each film should be planned to involve the learner as an active participant. The learner's viewpoint should be the focal point in film design and production. As a matter of fact, such application of the film medium will require a rethinking of the curriculum, the sequence of units, and in general a re-structuring of the teaching-learning process.

For inclusion in a report which is to be published as part of the final report of the 1966 Symposium on Research and Utilization of Educational Media for Teaching the Deaf, a very interesting paper on "8mm Film and the Education of Handicapped Children" has been prepared by Joan Rosengren Forsdale. The closing paragraph of this paper is especially significant.

"As Marshall McLuhan, Director of the Center for Culture and Technology at the University of Toronto, has recently been making familiar to an everwidening audience, media may profitably be viewed as extensions of our senses. They give us more power over our environment, as do the more common-sense supplementers, such as binoculars or radar or headlights for everyone, and as do a hearing device, a leg brace, or

eyeglasses for the handicapped. By, in their own way, increasing the amount of information available to us, the media enable us to exploit more fully the senses which work well for us, and help us to make the most of the senses whose strength is limited. Film, then, clearly has a place among the devices that we use to extend our control over our environment. 8mm makes it possible for any child to be on his own in learning from the moving image; it enables the handicapped child to do the same thing. Both the sameness and the independence are important to him. It puts him on his own in an area where he has never been able to be independent before. And on his own is where he needs and wants to be."

The present use of film on reels, with all of its potential, could be compared with the writing on scrolls of Egyptian times. The scroll was a valuable historical record, even documentary; it had an element of the present as the scribes wrote about current events; it provided information which was not available by any other means. One problem for the average student, or a greater audience that we might call laity, was accessibility. Of course, we know now that the newspaper, the magazine, the pamphlet, the book, and by all means the "paperback" have brought to the masses the words as well as the pictures about the past, present, and foreseen future of our world. The printing revolution has engulfed us all and is evident at each point in time of our daily lives.



We are already caught up in a similar revolution in the film medium. Feature films are the fiction; educational films are the non-fiction; current events films are the periodicals and newspapers; and the 8mm films are the paperbacks. Accessibility of information via the film medium will become as natural as picking up the best seller at the newsstand. Let's hope that we can be as creative in the design of films as the printing industry has been recently in the design of printed materials. The film is a powerful resource. Its versatility awaits the imagination of creative educators.

## MEDIATED SYSTEMS FOR TEACHING THE DEAF

Robert E. Stepp

Today one reads frequently of the employment of the "systems approach" in solving a problem, or the formulation of a "systems concept" in planning a project, or the application of a "systems development" in studying a particular situation. These terms are a product of our technological revolution, particularly have we been influenced by our space program. As we sit in the comfort of our living rooms and watch the launching of a manned space craft into orbit, the happy words we expect to hear just prior to the launch are "all systems go." The announcer from time to time will say that the such and such system is functioning properly, or fired on time, separated as scheduled, or shut off as planned. What does this mean? It means that a series of component parts have been designed to function in a prescribed sequence to accomplish a predetermined objective.

Is it conceivable that the education of the deaf can benefit from a systems approach to learning? Educating the deaf is already a system, but in most instances it has not

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benefited from the analysis and synthesis that are associated with the systems approach.

Being a parent of a deaf son and having watched the procedure of charting his audiogram at several centers, I have been impressed with the sequence of events, the array of equipment involved in the test, and the environment in which it was conducted. An audiologist probably would quickly say that this system is not as efficient or precise as it should be or will be in the future, but, nevertheless, it is the beginning of a systems approach. In visiting schools for the deaf where I saw elaborate facilities for diagnosis of physical defects and resources for testing mental ability, I was disappointed to find a very sterile teaching environment in their classrooms. At some schools I found the recreation facilities to be superior to the learning resources. Speaking as an observer, and not as a qualified teacher of the deaf, I must come to the conclusion that etiology has received more attention from researchers and administrators than has the problem of educating the child after diagnosis had been made.

These statements are not intended to be critical of the excellent teaching that I have had the pleasure of observing. I would classify the results in many cases as being miracles. Outstanding teachers of the deaf are model teachers for others in the profession to emulate. As meritorious as this teaching was, I thought on many occasions what a particular teacher could have accomplished with the proper, or at least appropriate, teaching materials. I recall visiting

a high school classroom in which the instructor was explaining how an airplane flies. He was discussing with the students the action of the airflow past the wing surface and how this movement causes lift. His resource was the chalkboard. He had prepared an adequate diagram, but each time he turned to add to the diagram, label a part, or make a point, communication stopped. I wished that he had had an overhead projector. Better yet, I could envision the animated sequence in a film on how an airplane flies which clearly illustrates this process. The instructor took thirty minutes while I was present (and perhaps longer) to explain a function which, with the right instructional materials, could have been accomplished in five minutes. The film that I refer to is a free film distributed by one of our major oil companies. An entire school could be equipped with overhead projectors for the price of one acoustical chamber. Money is not the reason that educating the deaf has not undergone a systems analysis.

Reference has been made to the fact that education is itself a system, complete or incomplete, efficient or inefficient. Simply stated, the teaching process could be analyzed in terms of three sub-systems: the teacher without media, the teacher with media, and the teacher within media.

It is difficult for me to envision a teacher of the deaf working without media. The lecture, a discussion, or a conversation, with the student receiving the message by speech-reading, fingerspelling, or both, would qualify as a teaching

act fitting this category. If the teacher's voice is amplified and the students are wearing headsets, the teaching act is now employing media. There are times, of course, in the development of language skills when the student's ability to comprehend spoken discourse must be verified. The true test is his skill in communicating with other people in a highly visual world which is, however, predominately orally structured. To me, communicating in the classroom without the use of media is more of a testing function than a teaching function.

The second element mentioned was "teacher with media." This is an aspect of teaching the deaf which is undergoing considerable change at the moment. My thoughts concerning the appropriate use of media are exemplified by the demonstration Robert Schmitt gave at our 1966 Symposium on Research and Utilization of Education Media in Teaching the Deaf in Lincoln, Nebraska, and one which you saw at a previous session of this conference. Mr. Schmitt is an inspired teacher of the deaf who understands the contributions of media to the teaching-learning processes. He employs the overhead projector as a language vehicle as well as visual graphic device; he uses slides, filmstrips, and study prints as a pictorial medium, and both 16mm and 8mm films to give realism to the teaching situation. His constant involvement of the learner in this process develops a form of participation which engulfs the child, excites him, stimulates him to be



highly attentive for receptive language, and eager to express himself. Mr. Schmitt has designed a curriculum unit as a miniature system to present pre-selected information in a manner planned to elicit from the children the types of responses most conducive to achieving the learning objective. There is a "best way" for the student to learn this topic. The challenge to the teacher is to decide the procedure best suited to the learning ability of the student, to select the learning resources to facilitate this study, and to structure the learning experiences through which the child must proceed in order to learn.

Media can be classified for its functional contribution in teaching the deaf. The chalkboard, for example, is probably the most accessible, but has the disadvantage that the teacher must turn away from the children when writing or drawing material on the board. The overhead projector, on the other hand, is more versatile, allows the teacher to face her students at all times, but is at a disadvantage when material is to be viewed for long periods of time. Flash cards are excellent for drilling individuals or children in small groups if someone is available to serve as a tutor-evaluator. Captioned materials greatly assist the deaf student in his understanding of the projected image. Motion media which allow the learner complete operational control and present ideas which permit his interpretation, including speech-reading and fingerspelling, may be the most functional.

This leads to the third element in the system, "the teacher within media." A term was coined by Mr. Robert Heinich, Department of Instruction Technology, University of Southern California, in his keynote address at the 1966 Research Conference referred to previously. He identified the teacher who is on media as being the "mediated teacher." One familiar example would be the television teacher; another would be Dr. Harvey White teaching a complete high school physics course by motion pictures; or a third example would be a programmed learning unit with the mediated teacher being the author. At first glance, the application of mediated teaching to the education of the deaf seems to have only limited potential. Before ruling out its possibilities and restricting its function, let's identify various types of mediated systems.

The programmed text with or without a teaching machine is one form that has been and should continue to be explored. New ideas in printed programs, particularly as they relate to reading and mathematics, should be tested with deaf children. Although many publishing companies are producing innovative applications of programming principles, I am referring to the work of Mr. Adrian Sanford and his staff at the Educational Development Corporation in Palo Alto, California. His staff has been involved in the production of such innovative materials as Addison-Wesley's elementary mathematics program; Holt, Rinehart and Winston's Kit A,

Developing Number Experiences and Developing Pre-Number Ideas; Ginn and Company's Building Pre-Reading Skills; and Follet's Frostig Reading Readiness Materials. Another type would be the synchronization of slides and/or filmstrips with a cueing device, either by signals or auditory tape (if you wish concurrently to develop residual hearing) or an electronic response box for the learner to use in selecting his responses and thereby controlling his own progress. Project LIFE, sponsored by Captioned Films for the Deaf, has some of these characteristics as part of its program. The "hardware" is already on the market to permit such programming, but it is the "software," the instructional materials, that must be produced.

Captioned materials, either on still media or on motion media, could be adapted to a form of mediated teaching. This means that the content information and instructions for completing the lesson, including the responses, must be designed into the materials. This form of self-instruction would have to be planned and coordinated carefully to the student's level of reading ability.

Television is another resource with great potential in a mediated system. The idea of bringing the world, and even outer space, to the classroom via television has become standard procedure. Commercial agencies have adapted their message to fit the medium very effectively for home reception. At least the point can be made that the technology

is nearing perfection even though the instructional programs have not received the creative attention of educators that the hardware has received from the engineers. The video tape recorder is becoming more compact in size and is being greatly reduced in price. The production and utilization of lessons on videotape will soon be a reality for most schools. The advantage of this medium is its instant playback capabilities and the simplicity of editing, altering, or correcting the lesson. Would the deaf child profit from watching his own learning progress? The videotape recorder offers the child the opportunity of seeing himself, his actions and reactions to his environment. If this is important to his educational growth, in what type of learning situation should it be used?

Motion pictures as a form of mediated teaching are not new. The Mason Visual Hearing Series and the Markovin Life Situation Motion Picture Series are two examples of using a medium to provide speechreading instruction and practice. To be more accurate one should probably say that mediated testing is not new. The work of Nitchie, Heider and Heider, Mason, Markovin-Moore, Utley, Lowell, and Moser in the design of films for testing lipreading ability are widely recognized. Special mention should be given to Dr. Jean Utley Lehman who produced a series of films for testing lipreading ability and for her research in identifying salient factors which are involved in both teaching and testing lipreading.

The motion picture has many of the same possibilities as a mediated form of instruction as television, with the exception of instant playback and editing. The new 8mm format in cartridges offers advantages of packaging that other types of motion media cannot provide at the moment. With availability of cartridge load projectors, the student is now able to handle the cartridge, load his own film in the machine, and operate his own projector. This enables him to proceed at his own rate, at his own learning convenience, and at any location, school, dormitory, or home, where the inexpensive equipment has been provided. A continuity of instruction between home and school can now reach a new level of compatibility and understanding.

Before concluding this discussion with an expansion of the mediated concept, speculation should be given to the role of the computer in the classroom of the future. To my knowledge, the first experimental computer classroom was established at the Systems Development Corporation in Santa Monica, California. This research and other studies have given us a foresight as to the capabilities of the computer as a programming device.

Recent mergers and cooperative arrangements among major electronic companies and publishers are strong indications as to the potential educational market for programs which reflect the systems approach. To name a few: Raytheon has acquired three smaller companies: a leading producer of



closed-circuit TV and language labs, a manufacturer of electronic teaching systems, and a large producer of science teaching aids. Radio Corporation of America has acquired Random House, Inc. Xerox has bought a company that reproduces books, a company that runs industrial training programs, and American Educational Publications. IBM has issued stock valued at \$62 million for Science Research Associates, Inc., a publisher of texts and testing materials. General Electric and Time, Inc., have launched a joint enterprise to produce conventional instructional materials -- books, films, and periodicals -- as well as such new materials as videotapes, educational games, electronic learning devices, and information storage-retrieval units. Sylvania Electric Products, Inc., and Readers Digest are jointly investigating ways of developing advanced methods of instruction that will improve educational programs. This trend toward consolidation forecasts integration of media into learning units.

Education is one of the last areas that automation has invaded. Deaf education may be so special that automation has less application than in general education. On the other hand, the specialized needs of the handicapped child may be better served by advanced technology than we foresee today. One example is the work of Dr. Omar Khayyam Moore, University of Pittsburgh. He has invented and is currently conducting research on a "talking typewriter." This complex

machine has enabled the hearing child to accelerate his language development and particularly his written creative composition. Dr. Moore is expanding his research to include deaf children. Advanced technology, whether it be computers or some other form of automation, is worthy of extensive research by educators of the deaf.

A mediated program which has received national attention is the audio-tutorial approach to teaching botany created by Dr. Samuel N. Postlethwait at Purdue University. He has completely reorganized this college course by reducing the typical college lecture series to one weekly session and one small group seminar session. The science laboratory has been replaced with thirty individual study carrels in which the student has access to the materials of instruction (including live plants, microscopic slides, 8mm films, tape recordings, specimens, and syllabus) that are required for a specific learning experience. The tape recorder is the programming medium and the recorded voice of Dr. Postlethwait directs the student through the exercise by telling him information about the specific plant or process being studied, explaining unusual aspects of the topic, instructing him as to the learning resources he should see or use, and guiding him in the sequence through which he acquires the knowledge and skills in the unit of learning. The film, "Multi-faceted Approach to Teaching Botany," produced by Purdue University dramatically demonstrates this method. Dr. Postlethwait said

in his address at the 1966 Symposium in Lincoln, "It would be presumptuous for a professor of biology whose major interest is corn morphology to make recommendations to those of you have had extensive experience in teaching the deaf. However, some of the basic philosophy on which the programming of the botany course is based should apply to individuals who wish to learn regardless of their handicap. The restructuring of our botany course was motivated initially for students handicapped by a deficient background. Perhaps some of the principles suggested will apply for students who have poor eyesight, reduced dexterity, partial or complete hearing loss or even to people with no physical limitation. The basic assumption is that individuals differ in many ways. Perception is achieved by different individuals in many different ways, some by feeling, others by seeing, some by reading, some by hearing and by various combinations of these. The potential of an individual is not specified by his handicap or apparent physical limitation. If one can stimulate the unimpaired senses of an individual, it may be possible for that individual to achieve equal or more accurate perception and understanding of a subject than can be achieved by other individuals who have no physical handicap at all."

An auditory approach is not a suitable programming channel for the deaf person. There are visual channels which would function adequately for a form of self-instruction. The mediated teacher as the visible tutor-narrator on

the film could be the presenter, interrogator, illustrator, and counselor giving the learner the opportunity to acquire his information by speechreading or fingerspelling, or by whatever form of receptive language is being utilized for the deaf viewer. It has seemed strange to me that until recently very little effort has been made to require the deaf child to gain information independently by the same form of receptive language that he employs when communicating with another human. Let's assume that a child is learning to speechread. Shall we let him wait until someone can stop and talk with him, thereby providing speechreading practice? Or shall we design a mediated system by which he is required to study his content subjects from speechreading a teacher on film? The normal hearing child receives a high percentage of his information from listening, and often incidental listening at that. The deaf child needs to be bombarded similarly with his dominant receptive language and because this cannot be a natural process, the learning experiences must be simulated. Mediated teaching offers a sophisticated form for simulation.

What is the role of the classroom teacher when mediated teaching is also employed? The teacher becomes the teacher -- not the drilling device -- not a conveyor of facts -- but the person with whom the student converses, and the one who verifies the student's interpretations, associations, and assimilations. The teacher witnesses the student's performance,



corrects misunderstandings, improves speech, and helps to develop social relationships. These acts are no different than those presently expected of the teacher. Hopefully the difference is in the utilization of time, the contribution of the teacher, acceleration of the student's language development, and his comprehension of the subject matter.

What is the role of the student? The student assumes a greater degree of responsibility for his own learning. He studies, responds, receives confirmations, practices, imitates, makes comparisons and observes his mediated lesson as a participant. Involvement is a key factor in the successful utilization of a mediated system. It is not sufficient for the student to be a viewer; he must be an active participant.

What facilities will be in a classroom that is planned to permit mediated teaching? This is difficult to imagine until the media of instruction have been selected. First, let's imagine an auditory training system which is an integral part of all other systems. The tape recorder, language master, sound filmstrips, motion pictures, television, etc., all are channeled through the same amplifier providing to the student a consistent and constant range of sound frequencies. It is further refined so that each student has a coded key or card which, when inserted in the activator slot, sets the auditory equipment to his best receptive range. The child's ear receivers are small, light weight, and remotely activated. Each child will have his own study carrel fully



equipped for mediated teaching. The library of learning units are in the school ready for immediate use as needed. The entire room is carpeted, and one area is equipped with comfortable chairs, suitable tables, drapes, and other furnishings which are conducive to informal discussion. Special carrels are set up from time to time for development of particular science concepts, mathematical processes, and social studies events. Language arts is an integral part of all lessons and is stressed constantly.

If mediated units of instruction are developed to teach the deaf, what changes are needed in our teacher education programs? What instructions are we currently providing the teacher of the deaf so that she may employ media as an integral part of her daily teaching? A qualified teacher should be an authority in selecting learning resources, in prescribing materials for specific learning problems, and in utilizing these media in appropriate fashion. The teacher should be a creator -- one who knows the unique contribution of each type of media and can design media to achieve these purposes. The teacher has to be able to evaluate the media and the learning which results from their use. Teacher education programs have failed to provide an understanding of the function of educational media in the learning process and, thereby, have failed to prepare teachers for the invasion of technology into the field of education.

Will mediated teaching make the deaf more silent or

will he have a greater desire to express himself and thereby have a greater language facility? This is for the researcher to determine. Usually the more one knows about a subject the more one wants to express himself. Whether the deaf person expresses himself orally or by fingerspelling depends in part on the basic language of the mediated system and the age at which this form of communication saturation is started.

In closing may I say that I envision the day that parents will be given a kit of mediated teaching materials the same day the doctor diagnoses the deafness. I can foresee the time when the deaf child comes to kindergarten with an understanding almost equal to that of the hearing child. If the systems approach is the basic method at all grade levels, the day could come when the deaf child might excel the scholastic performance of many high school students in his own age group. Dr. Harriet Kopp, also speaking at the 1966 Lincoln Symposium, closed her address on "Application of Systems Concept to Teaching the Deaf" with this statement, "Can we shake free from the shackles of didactic group teaching? Are teacher education programs oriented toward the professional education of individuals to perform these tasks effectively? Educators of the deaf and of the hearing must re-examine their objectives and must master the new media of teaching if they are not to be overwhelmed by technological advances. Instrumentation must remain the willing servant of the skilled master."

I believe that teaching of the deaf requires a superior form of teaching and a superior design for instructional materials. If these are achieved the deaf child is only limited by his mental ability -- not his acoustical handicap. Contrary to the title of this paper, the real challenge is to design mediated learning systems, not mediated teaching systems. The question is not "Can it be done?" The question is "Do we want to do it?"

Suggested Readings - Published by Dr. Robert Stepp

- "Using 8-Millimeter Films to Teach the Cerebral Palsied Deaf" and "Operating a Learning Laboratory for Teaching Lipreading to the Hearing Impaired," Report of Proceedings of 42nd Meeting of Convention of American Instructors of the Deaf, Michigan School for the Deaf, Flint, Mich., June, 1965
- "Symposium on Research and Utilization of Educational Media for Teaching the Hearing Impaired," American Annals of the Deaf, Nov., 1965
- "Using the Overhead Projector," (transparency master set), published by Minnesota Mining and Manufacturing Co., 1965
- "Programming 8mm Films to Teach Speechreading to Deaf Children," Audiovisual Instruction, March, 1966
- "A Feasibility Study to Investigate the Instrumentation, Establishment and Operation of a Learning Laboratory for Hard of Hearing Children," a guide for use with film, 8mm Film in Education: Its Emerging Role, produced by Project in Educational Communication, Teachers College, Columbia University, Jan. 1966
- "An Audiovisual Laboratory for Teaching Speechreading to the Deaf," Illinois Medical Journal, April, 1966
- "A Speechreading Laboratory for Deaf Children," Volta Review, May, 1966

## TEACHING READING TO DISADVANTAGED CHILDREN WHO ALSO ARE DEAF

Millard Black

When I was asked to participate in this institute as a speaker, I readily accepted. I will hasten to disclaim any knowledge of teaching the deaf to read, a fact that you would very quickly ascertain, in any event. However, I did think that I might have some information that might stimulate you who are experts in teaching deaf children to a further consideration of the teaching of a specific subject -- READING -- to a specific group of deaf children -- THE DISADVANTAGED. It was for this reason that I was so pleased to be able to meet with you and share ideas. Certainly my own ideas about this specialized area of reading instruction will be clarified through your reactions to what I will say, and perhaps through our discussion you may gain some further insights into this particular subject area with a particular kind of deaf child.

Early in April I was thinking about what I would present to you today, and asked Dr. Dorothy Carr if she would arrange for me to visit one of the schools for the deaf and

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Millard Black, Elementary Reading Supervisor, Curriculum Branch,  
Los Angeles City Schools



actually teach these children for a couple of days. I would like you to know that I have never had such a humbling experience in my life. We went to Hyde Park School, where I was permitted to work with a class of B-1 pupils. Remember, this was my first time in a class of deaf children. I had the naive idea that I could go into the room, stimulate these children with this photograph, discuss it, and develop with them the usual paragraph which they then could re-read and which would form the basis of work in the ensuing lessons. In last Sunday's comic strip of Dennis the Menace, Dennis informs his mother that he would not criticize her table manners, however bad they might be, because he would be too polite to do so. When asked by her husband, in the next frame, what dessert was to be, she replied "Humble pie." I can assure you that that was my dessert for lunch after returning from my first day with that class. I went back the next day, and from my two hours work with the group, they had learned two words -- and two derivatives of those words. The culturally-different child and his peculiar educational problems is no stranger to me. I have taught the Navajo child when it was necessary to use an interpreter to develop certain concepts. In a school not more than a mile or two from this campus I have taught Educable Mentally Retarded children of Mexican-American descent. I studied the problems of teaching reading to disadvantaged children. But nothing which I had encountered prepared me for the shock which I experienced in those two



days at Hyde Park. My unbounded admiration for the tremendous skill you teachers of deaf children evidence every day must be acknowledged.

I discussed, following my Hyde Park adventure, with Dr. Dorothy Carr the possibility of withdrawing as a participant in your institute. I am reminded of Dr. Newton Metfessel's reaction to being in a room with 24 children whose I.Q. was above 170; he knew, he remarked, where the lowest I.Q. in the room resided. Today, I know where within this room the least knowledge about teaching deaf children to read resides. Dr. Carr, always generous and understanding, suggested that by my discussing with you some of the known factors about the language development of the children of poverty and suggesting some of the ways in which these factors may be minimized, your own peculiar problems as teachers of deaf children may be perceived in a somewhat different manner. It is my hope that as we continue this presentation and as you react to it later in the afternoon you will remember that I am reporting on some research, on some observations, and am making some recommendations which relate to the hearing child. I will pose some questions as we continue our work this afternoon which will call for you to evaluate recommendations for the education of the hearing child in relation to your own expertise in the education of the deaf child.

As a basic element of the framework of my discussion, I suggest that we view the deaf child from a middle-class

home as being a handicapped child, and that we consider the deaf child from the environment of poverty as being a "multiply handicapped child." This suggestion stems from a comment by Dr. Newton Metfessel that he found many children of the culture of poverty to be more deaf than middle-class

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Unpublished Address to Supervisory and Administrative Personnel of the Los Angeles City Schools on March 25, 1965, by Dr. Newton Metfessel, Professor of Educational Psychology and Director, Project Potential, University of Southern California, Los Angeles.

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pupils enrolled in the John Tracy Clinic or more blind than middle-class pupils in our sight-saving classes. These observations grew out of Metfessel's experience while

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Edgar Lowell and Newton S. Metfessel, "Experimental Concept Formation Test for Pre-school Deaf," Journal of Speech and Hearing Disorders, August, 1961, Vol. 26, No. 3.

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developing an experimental concept formation test for pre-school deaf children.

In one of the classics of the teaching of language to elementary school children, Teaching Language in the Elementary School, the Forty-Third yearbook of the National Society for the Study of Education, these comments about the importance of language are made by Dora V. Smith:

Language is the instrument of thought and communication. Growth in thinking is growth in the process of ordering, relating and interpreting experience ... In the process of growth, language and thought power mature together. They are mutually

dependent one upon the other. Successful teaching of language, therefore, holds these powers in constant relationship and refuses to divorce instruction in language from improvement in the actual expression of ideas.

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Dora V. Smith, "Growth in Language Power as Related to Child Development," Teaching Language in the Elementary School, Forty-Third Yearbook of the National Society for the Study of Education, Part II, (Chicago: The University of Chicago Press, 1944), pp. 52-97.

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Seegers, in the same publication, reinforces Smith's position with this statement:

Language is more than a subject and more than an "activity." It is the major basis upon which understanding, or misunderstanding, is predicated.

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J. Conrad Seegers, "Language in Relation to Experience, Thinking, and Learning," op. cit., pp. 36-51.

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The following statements taken from a recent bulletin of the Information Retrieval Center on the Disadvantaged - separated from the comments of Smith and Seegers by more than two decades -- might have been part of the same publications:

It is important that . . . diversity (of speech patterns) be recognized, but it is equally important to recognize that language is not merely speech...

In a monolingual society, where the ability to communicate sentiments, thoughts, and characteristics through the verbal symbols of "standard" speech is one of the attributes of the educated man, to be inarticulate in English, or even to moderately articulate in a low-status dialect is to be inherently unequal. It appears that some such inequality exists for many disadvantaged children... studies (of the language of disadvantaged groups) have consistently indicated the existence of a quantitative defect among the disadvantaged, though the factors of sex, race, I.Q. and

such other variables as the ethnic identity of the experimenter to affect the results significantly and often unpredictably. On the whole, however, such studies would seem to indicate that low social status (rather than ethnic status or even bi-lingualism per se) actually does have a quantitatively depressing effect on certain forms of language production...But language is more than quantity and language behaviour consists of a good deal more than countable, audible items....

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J. Gussow, "Language Development in Disadvantaged Children,"  
IRCD Bulletin (New York; Yeshiva University, November, 1965),  
Vol. 1, No. 5.

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Let us take as the basis of our discussion a series of characteristics of the culturally disadvantaged child and consider how we may use the reading program to obviate some of these characteristics.

It has been suggested that our culture needs to develop some sort of a transitional institution which will help translate the culture of the school to the poverty child and, in turn translate the culture of poverty to the teacher. A recent visit to the Mary E. Bennett School for the Deaf causes me to believe that for the deaf child such an institution exists. However, I wonder whether even such an institution can transmit to the teacher, concerned with helping the aurally handicapped child develop the skills of communication, knowledge and understanding of the environment from which the pupil comes and of the limitations and strengths which that culture transmits to the individual pupil.

It is my opinion that the average teacher, particularly in the elementary schools, fails to accurately assess the strengths which the disadvantaged pupil possesses. Since some of the skills, knowledges, attitudes, and experiences which combine to form these strengths are beyond the normal experiential background of the middle-class individual, they constitute an unknown and untapped reservoir of strength. We are acutely aware of some of his more apparent characteristics he is relatively slow at cognitive tasks, but not stupid; he appears to learn



most readily through a physical, concrete approach; often is slow, but may be persistent when the content is meaningful; is traditional superstitious, and somewhat religious in a traditional sense; is from a male-centered culture, except for a major section of the Negro sub-culture; is inflexible and not open to reason about many of his beliefs concerning morality, diet, family polarity, and educational practices, to name only a few examples; feels alienated from the larger social structure and is frustrated because of this assumed alienation; holds others to blame for his misfortunes; values masculinity and attendant action; views intellectual activities as unmasculine; appreciates knowledge for its practical, vocational ends, but rarely values it for its own sake; desires a better standard of living, with personal comforts for himself and his family, but not necessarily at the cost of adopting a middle-class way of life; is deficient in auditory attention and interpretation skills; reads ineffectively; is deficient in the skills of communication generally; has wide areas of ignorance; is often suggestible; and is suspicious of innovations.

What are some of the strengths of the disadvantaged group? They include, according to Riessman, relative freedom from the strains of competitiveness and the need to establish oneself as an individual; cooperativeness and mutual aid within the extended family; freedom from self-blame; enjoyment of other members of the family and freedom from intra-family competition; the security which derives from the extended family and a traditional outlook; and an



enjoyment of the more physical aspects of life, such as enjoyment of games, music, sports, and cars.

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Frank Riessman, The Culturally Deprived Child, (New York: Harper and Row, 1962).

"The Culturally Deprived Child: A New View," Education Digest, Nov., 1963, Vol. 29, pp. 12-15.

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The disadvantaged child may be given an environmental setting through a consideration of these characteristics of a disadvantaged area:

We can round out the description of our culturally disadvantaged children by citing some characteristics of a large area in Los Angeles County, which appear to be similar to the characteristics of other very low income areas. Agencies which are seeking to ameliorate culture disadvantage state that in this area: (1) the percentage of broken homes is almost three times that of the total county; (2) family income is 25 percent below the county median; (3) population density is approximately double that of the entire county; (4) housing is substandard, and continues to decline in quality; (5) the school dropout rate is 212 times as large as the average of the city; and (6) youth delinquency rates are higher in almost all offense categories than for the county generally.

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Millard H. Black, "Characteristics of the Culturally Disadvantaged Child," The Reading Teacher, March, 1965, pp. 465-70.

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Add to these characteristics the almost universal lack of a model educational achievement in the poverty home.

The following factors reflect the conclusions of many persons who have studied the causes and results of cultural disadvantage and are believed to be operative in the lives of children from the culture of poverty. Let

us consider them within these groupings: Language factors;

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Loc. Cit. Originally reported with the permission of Dr. Newton Metfessel.

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Learning patterns; Readiness for instruction; and School behavior. Again, let us remember that these comments and the attendant recommendations are based upon research and experience with culturally disadvantaged children in normal classrooms, and that it is you -- the skilled teacher of the deaf child -- who must determine the validity of the recommendation to your particular problem, the teaching of the disadvantaged deaf child.

1. Culturally disadvantaged children understand more language than they use. When it is recalled that some investigators report that at grade two the vocabulary of disadvantaged children is approximately one-third that of normal children and at grade six, one-half, we realize the paucity of expression of these children. This retardation

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J. Allen Figurel, "Limitations in the Vocabulary of Disadvantaged Children: A Cause of Poor Reading," Improvement of Reading Through Classroom Practice; Proceedings of the Annual Convention of the International Reading Association, 1964, Vol. 9, p. 164.

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is of particular importance in social interaction with adults and peers, and in group participation in such areas as reading, oral and written English, and the social studies.

A question for us to consider during the discussion period is this: TO WHAT EXTENT DOES THE VERY EARLY PRE-SCHOOL EXPERIENCE, THE CLOSE PUPIL-TEACHER RELATIONSHIPS,

AND THE VERY SMALL PUPIL-TEACHER RATIO EXISTING IN CLASSES  
FOR DEAF CHILDREN OBVIATE OR AMELIORATE THIS DIFFICULTY?

2. Culturally disadvantaged children frequently use a great many words with fair precision, but not those words representative of the school culture. An attempt to ameliorate the disadvantage caused by this lack of appropriate vocabulary places the teacher in a dilemma. Shall she encourage, seek to develop expression within the vocabulary possessed by the pupil, or shall she take the traditional teacher-role and attempt to teach what is subjectively perceived to be "correct" usage, including meaning, pronunciation, and syntax? These comments appeared recently in the literature:

What is undoubtedly and unfortunately true is that a good deal more effort has been expended in primary school classrooms across the nation on modifying the pronunciation and syntax of lower-class speech, than has been expended on improving language functioning for these children. First, if we are really concerned with social acceptance, we have no information on the kinds of "corrections" which should be emphasized. We do not know which phonological deviations, which syntactical "errors" or which lexical or which lexical substitutions have the most negative effect on the listener. We do not know which interfere the most with social mobility and which kind of "standard" speech, if any, we should be working toward.

Second, we know that in situations of true bilingualism the introduction of fundamental educational material in the native language provides a promising approach to fostering competence in the dominant, non-native language. The advantage of considering such an approach is that it would substitute for spurious moral judgments of "correct"

and "incorrect" notions of practicality and usefulness which are more appropriate to the teaching-learning situation. It is not necessary, of course, that school be conducted in non-standard dialect or in languages other than English. What has been proposed is that we concentrate in the early grades on teaching the fundamentals rather than on the correction of pronunciation and grammar. ...One specific suggestion has been made that we separate the teaching of reading from phonological considerations. It would not seem inappropriate to permit the child to speak the visual symbol in his own way so long as its experiential meaning was clear to him, for it is unlikely that constant correction of his pronunciation when he has correctly "read" a word is the most effective way to promote literacy.

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Gussow, loc. cit.

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Should the teacher, for example, determine that demonstrated knowledge of the meaning of the word c-a-n-'t is the goal of the lesson, or that the pupil change his pronunciation from -- or, for that matter, to -- the Boston can't, the more generally used can't, or the two-syllable pronunciation used by my own Southern Missouri ancestors, ca-yunt?

The third reason why an overly early or severe emphasis on "correct" speech may be educationally questionable is because constant correction of these children seems often to result not in improving their language behavior, but merely in suppressing it. And if our concern is with the maximum development of the child, we must recognize that his language is not merely related to the way he speaks, but to the way he thinks. A low-status dialect may hamper his social mobility, but a restricted language development may limit his intellectual potential. This is the crucial issue: not "how well do these children speak," but "how well do these children think?" What is the extent and nature of the relationship between language, thought, and learning? How and to what degree do limited verbal



skills reflect and/or contribute to the underdevelopment of cognitive capacities? ... Clearly, if the language forms of these populations at the level to which they have now developed are inadequate to the abstract conceptual demands of science, philosophy, and other complex intellectual disciplines we have no choice but to intensify our efforts at language modification and substitution in populations which suffer this disadvantage.

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Loc. cit.

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The factor that we must consider in teaching the disadvantaged deaf child is the importance of concept, rather than conforming to the standard of pronunciation arbitrarily -- and often subjectively -- established by the teacher or the school.

In my most recent visit to a class of deaf children, I was delighted with an example of concept building. The class of fourth grade children were to read a story in which the verb and its modifier "looked as if to say" appears. The teacher realized that the class had never experienced this relatively sophisticated form, either in reading or in speech. Therefore, she spent considerable time in preparing them to successfully encounter this group of words.

These three experience stories were the means she used:

Last week we saw three baby chicks. They were in an incubator. The brooder had not come. They did not have any food. They looked as if to say, "We are hungry."

In Mary's story the little white kitten was caught in a fence. It looked as if to say, "Please help me." Mary and Judy took it out. It looked as if to say, "Thank you."



Once there was a mother cat and her three kittens. One day they thought they would go on a walk, but it began to rain. They did not like to walk in the rain. When the rain stopped, they went on their walk. There were many mud puddles. One of the kittens fell into a puddle. The mother cat looked as if it wanted to laugh at her kitten.

IT SEEMS TO ME THAT THE QUESTION POSED BY THIS FACTOR IS, FOR THE DEAF CHILD FROM THE CULTURE OF POVERTY, HOW BEST TO DEVELOP CONCEPTS RELATING TO THE WORDS WHICH HE WILL MOST LIKELY ENCOUNTER WITHIN THE SCHOOL CULTURE. THESE WORDS SHOULD RELATE TO THE TOTAL SCHOOL ENVIRONMENT, NOT ALONE TO THE CONTENT AREAS WITHIN HE MUST WORK.

3. Culturally disadvantaged children frequently are crippled in language development because they do not perceive the concept that objects have names, and that the same object may have different names. The teacher who had done such a superlative job in preparing the children to read "looked as if to say" was developing readiness to read a very fanciful story in which an octopus and a sea urchin play ball. As I watched this teacher working to help one child pronounce the word, and with others to develop the concept of its tentacles and its eyes and of its ability to eject an inky fluid, I was impressed with the communicative differences between true language impoverishment and the use of dialect. The child, whether because of deafness or of experiential deficit, who has no name for an object or idea cannot talk about it. On the other hand, the child who

refers to this object or idea in a dialect or patois can communicate with effectiveness so long as the person to whom he is speaking understands the dialect. The teacher, after making certain that each child in the group could pronounce "octopus" and knew what the word meant, moved on to clarifying the concept of sea urchin and sponge. How did she do this? When she introduced the words in conversation and wrote them on the board she produced from inside the desk drawer a dried specimen and a piece of natural sponge. The major part of the reading period was occupied with such examples of concept clarification. When the period was finished, every child in the group knew the meaning of octopus, of sea urchin, of fluid, and the difference between a natural sponge and a synthetic one. The techniques that I observe in almost every classroom for teaching the names of objects -- the simple picture and name card -- can be used for teaching that a single object or experience may have several names and, conversely, that many different names may be used to refer to the same object or experience. Examples, appropriate at various grade levels, of different words which refer to "work" are: labor, toil, travail, swink, drudgery, and grind. Words which broadly mean "dip" are: immerse, submerge, duck, souse, and dunk.

A PERTINENT QUESTION FOR THE TEACHER OF THE DIS-ADVANTAGED DEAF PUPIL IS THE POINT AT WHICH TO INITIATE THE BROAD DEVELOPMENT OF SYNONYMS AND THEIR UNIQUE SHADES OF MEANING.

4. Culturally disadvantaged kindergarten children use fewer words with less variety to express themselves than do kindergarten children of upper socio-economic classes.

This is a factor which every one here has faced, not alone with pupils from low socio-economic homes, but from every level.

PERHAPS THE QUESTION WE FACE IS WHETHER THERE IS A DIFFERENCE IN THE LANGUAGE IMPDVERISHMENT OF VERY YOUNG DEAF CHILDREN WHICH RELATES PRIMARILY TO SOCIO-ECONOMIC LEVEL.

A second, and much more immediate question is this: AFTER THE PUPIL HAS DEVELOPED SKILLS WHICH PERMIT BOTH EXPRESSIVE AND RECEPTIVE COMMUNICATION, HOW CAN THE DELIMITING EFFECT OF THE CULTURE OF POVERTY BE OBTIATED, PARTICULARLY IN THE DEVELOPMENT OF THE SKILLS OF DISCOURSE?

5. Culturally disadvantaged children use a significantly smaller proportion of mature sentence structures, such as compound, complex, and more elaborate constructions. Certainly this is a part of the total language syndrome on which the teacher of the deaf child focuses. An interesting re-search would be to determine whether cultural differences are apparent among deaf pupils who have had similar educational experiences until the middle grades have been reached.

6. Culturally disadvantaged children learn less from what they hear than do middle-class children. While the deaf pupil does not hear in the usual sense, I observed excellent

"listening skills" being displayed in the classes of fourth and sixth grade pupils whom I observed in my recent observation.

THE QUESTION WE MIGHT RAISE CONCERNING THESE LAST TWO POINTS IS A DUAL ONE: (1) WHAT CULTURAL DIFFERENCES IN SENTENCE STRUCTURE AND IN LISTENING SKILLS ARE OBSERVABLE AMONG DEAF PUPILS FROM DIFFERENT SOCIO-ECONOMIC GROUPS, AND (2) ARE QUALITIES OF "LISTENING SKILLS" PRESENT AMONG LIP-READERS AS AMONG PUPILS WHO HAVE NORMAL HEARING, AND ARE THE SAME KINDS OF MATERIALS APPROPRIATE FOR DEVELOPING THESE SKILLS?

A second series of characteristics may be termed "Learning patterns." Five factors have been defined within this classification.

1. Culturally disadvantaged children tend to learn more readily by inductive than by deductive approaches. Because of distrust of self, induced by long economic deprivation and what the individual and his family perceive as discrimination may cause pupils to distrust their own judgment. The difficulties of a discovery technique in teaching these pupils is obvious. Since such pupils tend to derive from homes in which an authoritarian atmosphere pervades, difficulties of self-government and wide use of committee structures also are evident.

THE OBVIOUS QUESTION FOR TEACHERS OF BOTH DEAF AND HEARING CHILDREN WHO ARE DISADVANTAGED IS HOW BEST TO DEVELOP



## ATTITUDES AND HABITS OF SELF-CONFIDENCE.

2. Culturally disadvantaged children generally are unaccustomed to "insight building" by external use of lectures and discussions at home. Families who are preoccupied with supplying the elemental needs may have little opportunity to consciously help children to learn the techniques of discussion or to move from observation to conclusion. The general lower-class lack of verbal facility is compounded by the lack of hearing ability in the pupils with whom this group is primarily concerned.

HOW CAN DISADVANTAGED DEAF PUPILS BE TRAINED TO EVALUATE WHAT THEY OBSERVE AND TO DRAW APPROPRIATE CONCLUSIONS FROM THE OBSERVATION?

3. Culturally disadvantaged children are frequently symbolically deprived; for example, imaginary playmates are much less acceptable to their parents than to the parents of middle-class children.

THE QUESTION, AS IT RELATES TO THE ENTIRE FIELD OF LITERATURE, IS HOW CAN THE TEACHER HELP THE PUPIL TO RECOGNIZE AND TO VALUE THE IMAGINATIVE, BOTH IN WHAT HE READS AND IN WHAT HE PRODUCES HIMSELF?

4. Culturally disadvantaged children need to see concrete application of what is learned to immediate sensory and topical satisfaction. I would imagine that, because of the



need for continuing reinforcement during the long, long period of teaching deaf children to speak, this factor is not so prevalent among this particular population as among their hearing brothers and sisters.

5. Culturally disadvantaged children tend to have poor attention and consequently experience difficulty in following the orders of a teacher. This problem is, of course, related to how well pupils attend. Without having had experience in teaching the deaf, I would suspect that as the pupil's ability to converse with the teacher and with his peers improved his ability to attend improved. Experience in teaching severely retarded readers with the Fernald technique demonstrates that both increased reading skill and increased attention are an outgrowth of small-group or individual instruction.

A third category of characteristics may be termed readiness for instruction.

1. The culturally disadvantaged child often is characterized by significant gaps in knowledge and learning. The deaf child, born into a poverty home, is doubly handicapped for he is deprived of an avenue through which much incidental learning is acquired and lives in an environment in which the extreme importance of deficit may not be recognized. The disadvantaged child may be further handicapped by frequent changes of residence and school, particularly in the lower

grades.

My recent visit to Mary E. Bennett gave me an opportunity to see how one teacher had motivated parents to take pupils to visit the Los Angeles County Art Museum. These children, peering at one another so that they might "hear" every word that was said, were having a spirited discussion of Titus, of the artist and his relationship to the subject, of its sale price, and of its owner, who had loaned it to the museum.

2. Culturally disadvantaged children generally have had little experience in receiving approval for success in a task. Briefly, one questions whether this factor is present in the deaf child who has had the opportunity to attend a specialized school of high quality.

A QUESTION NOT DIRECTLY RELATED TO THE ACADEMIC PROGRAM, BUT ONE OF INTEREST IN THE EDUCATION OF DISADVANTAGED OR HANDICAPPED CHILDREN, IS WHETHER THE AMOUNT OF PRAISE GIVEN THE HANDICAPPED CHILD DIFFERS SIGNIFICANTLY FROM THAT GIVEN HIS SIBLINGS IN ANY OF THE VARIOUS SOCIO-ECONOMIC LEVELS.

3. Culturally disadvantaged children are characterized by narrow experiences outside the home. The research of Deutsch and others established that the child from the culture of poverty may have had few if any of the activities which most teachers assume.

HOW CAN THE SCHOOL PROVIDE FOR THE CHILD FACING A

COMMUNICATION HANDICAP THOSE EXPERIENCES WHICH ARE NECESSARY TO SUCCESSFUL PARTICIPATION IN THE PRESENT CURRICULUM?

4. Culturally disadvantaged children have very little concept of relative size. Here the teacher certainly can help the pupil develop an understanding of the vocabulary. Two groups of objects, one small and one large, will help to develop this understanding. Later, the addition of three sizes will help to learn that things may be compared in terms of big, bigger, and biggest. The flannel board, or even a desk top, with classification labels and a supply of pictures cut from magazines can be used to develop this concept.

A final group of factors concern the pupil's relation to the school and do much to predicate his failure or success.

1. Culturally deprived children generally are unaware of the "ground rules" for success in school. The ignorance of how to be successful does not imply that the pupil does not wish for success.

AS IN OTHER FACTORS, ONE MAY QUESTION WHETHER FOR THE PUPIL WHO HAS HAD SEVERAL YEARS EXPERIENCE IN SCHOOLS FOR THE DEAF HAS NOT OVERCOME THIS DIFFICULTY THROUGH HIS CLOSE AND SATISFYING EXPERIENCE WITH THE TEACHER IN TUTORIAL AND VERY SMALL GROUP INSTRUCTION.

2. Culturally disadvantaged children frequently end the reading habit before it is well begun. Because books, magazines, and newspapers are more easily dispensable than food

and clothing, to the very poor these do not represent necessities.

HOW MAY THE SCHOOL HELP THE DISADVANTAGED PUPIL TO OVERCOME THE FAILURE OF THE HOME TO PLACE HIGH VALUE ON THIS MOST NEEDED SKILL?

3. Culturally disadvantaged children are placed at a marked disadvantage in timed test situations. In cultures where time is not as important as in the middle class milieu from which most teachers spring, training is not provided which helps pupils to perceive that tasks -- whether in school, at home, or in the world of work -- need to be accomplished with alacrity.

CAN THE SCHOOL HELP THE DISADVANTAGED DEAF CHILD TO SEE THAT HIS FAILURE TO ADOPT THE TIME-VALUE OF THE MIDDLE CLASS MAY FURTHER HANDICAP HIM?

4. Culturally disadvantaged children need assistance in perceiving an adult as a person of whom you ask questions and receive answers. Many teachers believe that their role is that of a director of classroom activities, rather than that of a person who acts in an authoritarian manner. The child from the culture of poverty is more than likely to have a different concept of the teacher, based upon his relationships within his own family. The teacher who thus perceives himself must make a special effort to develop within the disadvantaged child the concept of the teacher as one whom



you logically and correctly go to for assistance.

Why do you and I feel a personal responsibility for helping the disadvantaged, whether through lack of hearing or lack of economic opportunity, develop skills which will enable them to compete successfully in school, in college, and in the labor market, which will help them to develop the self assurance that comes from knowledge and ability? Why have we made the education of the disadvantaged our own responsibility? For at least these two reasons, suggested by The Educational Policies Commission:

The unrealized promise of the ignorant mind disturbs not only the idealist and the humanist; increasingly it haunts as well those concerned with the grim demands of national survival.

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The Educational Policies Commission, Education and the Disadvantaged American (Washington, D.C.).

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McAllister expresses our concerns in these words:

(That our teaching may) influence learning favorably; make students so secure that they can fight quiet battles of prejudice in terms not merely of black and white but of understanding between people; help the pupil to engage in the intellectual life and develop an ability to enjoy it; (and) change lives of pupils and teachers so that there is a sustained concern for human values, for spiritual sensitivity and regard for the human spirit.

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Jane Ellen McAllister.

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Will we succeed? Not in our time will disadvantage be eradicated. Not in our time will the potential of every mind be realized. But we shall succeed -- and we shall ourselves know of our success, for success is, as Emerson says:



. . . to win the respect of intelligent people and the affection of children; to earn the appreciation of honest critics and endure the betrayal of false friends; to find the best in others; to leave the world a bit better, whether by a healthy child, a garden patch, or a redeemed social condition; to know even one life has breathed easier because you lived, this is to have succeeded.

## THE AUDITORY CHANNEL IN THE EDUCATION OF DEAF CHILDREN

Robert Frisina

Acoustic communication is the means through which the majority group in our society learns to deal with the English language. The long term struggle on the part of deaf children and those who attempt to teach them attests to the serious obstacles an impaired auditory system can impose in growing children.

Your concern for disadvantaged deaf children, in effect, is a concern for a combined problem of deafness and understimulation in language areas. The essential purpose of this paper, within the context of your program, is to present in practical terms the auditory channel and its possible role in the education of disadvantaged deaf children.

In order to consider the place of the auditory channel in the systems concept in the education of the hearing impaired, three fundamental factors will be discussed under the following headings: The Auditory System in Deaf Children; The Electronic Hearing Aid (Acoustic Coupler); and Application to Education of Deaf Children.

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This paper, concerned with practical matters in the education of deaf children, includes material to be presented and discussed at the "In Service Training Staff Development for Educators of Disadvantaged Deaf Children."

#### Subsystem A--The Auditory System in Deaf Children

The auditory channel, along with the other senses, exists as a subsystem to the central nervous system (CNS). The cochlea of the inner ear, for example, is to hearing as the retina of the eye is to vision. Both of these end organs make it possible for the brain to receive sensory data from the environment. Both serve to transfer different kinds of physical data into electrical energy that is common to both vision and hearing within the CNS. The inner ear and the retina code bits of information for transfer to the brain where data from the various sensory subsystems are collated, stored and retrieved. Both vision and hearing can be considered efficient "distance" senses in that each makes it possible for the individual to communicate in the immediate situation or remotely. The life space of an individual can be extended significantly as a result of these two sensory channels functioning normally. This comes as no surprise to those concerned with educational media nor to those involved in the education of deaf children; however, whenever either sight or hearing is impaired the size and quality of one's life space can be curtailed seriously. In the case of hearing impairment

it is essential that a thorough understanding of the auditory residuum be achieved in order that an appropriate acoustic coupler be incorporated into the auditory system.

#### Variations in Hearing Impairment.

Detailed audiologic assessment of children requiring special education on the basis of deafness indicates great similarity in the location of the problems within the auditory mechanism. However, a wide variety of individual differences exist as to the extent and quality of the remaining hearing. The two major problems in most impaired auditory mechanisms are reduction in auditory sensitivity and reduction in the ability to discriminate complex sounds (such as speech) even when amplified. Another way of describing these is to think of the inner ear as somewhat similar to an amplifier or loudspeaker within a hi-fi system. If the loudspeaker is defective, the fidelity of the whole system is reduced. Speech coming through such a loudspeaker would be distorted and difficult to understand; music would lose much of its quality. An amplifier not working properly could render the speech or music partially audible or inaudible. In either site of the problem within the hi-fi set understanding of acoustic symbols could be reduced substantially.

#### Residual Hearing.

Almost all deaf persons have some residual hearing, however slight it may be. A typical organized public or

private educational program for deaf children in the United States includes an estimated 35-40% of students who can learn to understand a good deal of amplified speech through hearing alone. An additional 40%, even though primarily visually oriented, are likely to derive substantial benefit from use of conventional group and personal hearing aids so long as hearing is used in conjunction with vision.

#### Suprathreshold Hearing.

Deaf persons also demonstrate variations in the physiology of hearing at suprathreshold levels. Some auditory mechanisms demonstrate a linear relationship between increased amplification and perception of speech; others improve to a certain point then, in spite of increased degrees of amplification, demonstrate progressively reduced efficiency in speech perception. In some cases of deafness the threshold of discomfort is reached sooner (at lower intensity levels) than in the non-impaired ear.

#### Auditory Distortion.

Frequently children with inner ear deafness have a mismatch in the hearing of low as contrasted with high pitched tones. Characteristically low frequency sounds are heard whereas the mid-range and high pitch sounds are inaudible irrespective of amplitude. This unevenness in hearing loss from frequency (cps) to frequency results in acoustic distortion which is antithetical to high fidelity. Physiologically such persons can hear but not understand



because inadequate bits of information are coded by the inner ear for transfer to the CNS for interpretation and linguistic applications. This kind of hearing can be particularly useful when employed as an adjunct to the visual system but does not generally satisfy the individual for linguistic purposes when used in isolation.

More will be said of this concept of acoustic fidelity which is important from two standpoints when talking about education of deaf children; the nature and extent of the defective auditory channel of the persons, and the acoustic characteristics of the hearing aid itself.

#### One or Two Ears.

The two ears in man function in harmony for allowing him to make decisions concerning localization of environmental acoustic events and possibly to enhance perception of speech occurring within adverse listening situations. In essence the two independent (but integrated) channels from the ears to the brain provide the normal hearing person with stereophonic sound. Yet it is not uncommon in deaf children to find a difference between the two ears of a magnitude to be of negative functional significance. Thus the matter of monaural or binaural residual hearing is of some importance in the acoustic coupling system to be used in individual cases of deafness. In some cases of deafness different bits of information

presented simultaneously to each ear can summate within the brain. This suggests that auditory stimulation emanating from a monaural or binaural amplification system and fed to two ears, each with different physiologic characteristics, might be more efficient than unilateral coupling.

The preceding brief description of the auditory mechanism attempted to delineate the following concepts:

1. The auditory mechanism consists of several components. The "electrical component" is first involved at the level of the inner ear. It is the inner ear that is unique to audition as far as nerve function within the CNS is concerned. That is, the inner ear serves to transduce mechanical energy into electrical energy; as an encoding device it codes bits of auditory information into the auditory nerve which in turn transmits these impulses to the CNS where multisensory relationships are established at cortical and subcortical levels. Depending upon the conditions, these relationships may have a positive impact on the child.

2. Environmental acoustic data are of fundamental importance in the initial language learning on the part of hearing persons. Partial or total absence of auditory input in infants and children seriously threatens even growth and development of linguistic skills and subsequent related educational, personal, and social functioning. Accurate

assessment of the auditory residuum is paramount in determining the optimum acoustic coupler and its role in the process of education.

3. Deaf children are not homogeneous in extent and kind of deafness. Almost all are expected to have some impairment in the cochlea of the inner ear and/or its associated auditory nerve. This results in distortion (e.g. frequency, amplitude, and intermodulation) which reduces the precision or clarity with which whole words and messages can be encoded for transmission to the brain. Supplemental information is thereby sought via the other sensory systems, hence the stress on multisensory data in developing acoustic communication in deaf children.

When hearing deficits become increasingly severe the individual shifts to visual orientation in which case the role of audition becomes essentially one of supplementation as opposed to a lead system in the learning of one's native language.

4. Suprathreshold physiology of an impaired auditory channel does not necessarily match that of the non-impaired mechanism. In some cases distortion (within the defective ear) remains constant over a wide range of intensity levels whereas in others the extent of distortion increases as suprathreshold intensities are made stronger. This factor demands individual appraisal of the gain characteristics of hearing aids relative to the impaired auditory system of each child.

5. Monaural evaluation of hearing is a necessary precursor to selection of optimum amplification at any given point in time. This requires, too, that longitudinal reassessments relate to advances in measurement techniques as well as technologic advances in acoustic amplification devices.

#### Subsystem D--The Electronic Hearing Aid (Acoustic Coupler)

The normal auditory system in man is capable of working over a frequency range of approximately 20 cps to upwards of some 20,000 cps; over an intensity range of some 140 db; and is capable of instantaneously utilizing small temporal differences within complex acoustic stimuli.

The various kinds of sounds that occur in our environment can be classified essentially as speech, music, and natural and man-made noises.

The average frequency range of male and female voices speaking the English language extends from approximately 100 cps to 10,000 cps; the difference between the intensity of the faintest sound th (as in thaw) and the loudest speech sound aw (as in thaw) is approximately 30 db. Theoretically the smallest range of hearing that can be tolerated for perception of speech is 30 db; this 30 db range of course would lie somewhere between the faint level of 0 db and the intense level of 140 db in the non-impaired hearing mechanism. Normally the midpoint of the 30 db range occurs around the +65 db intensity level on the 0-140 db scale.

### Dynamic Range

Impaired ears do not function over the ideal dynamic range of 140 db because they do not begin to hear at the 0 db level; an individual might not begin to hear a particular sound until +75 db is reached (his threshold for that sound) which would leave him with an intensity range of 140 db minus 75 db or 65 db. This is where a hearing aid comes in. In this case the hearing aid takes sounds that this deaf person would not normally hear and tries to put them between the 75 db and 140 db range of intensities. The size of the range between this individual's threshold (in this case 75 db) and 140 db (the maximum safe upper limit in normal and defective ears) or the person's tolerance level which might be lower than 140 db is called that person's dynamic range (in this case 65 db;  $140 \text{ minus } 75 = 65 \text{ db}$ ). The narrower or smaller the dynamic range becomes, the greater the hearing loss becomes which results in a less faithful auditory system for transmitting environmental acoustic data to the brain. Fitting the amplified sound into the most effective level within a person's residual dynamic range is one of the fundamental aspects of hearing aid selection and use.

### Frequency Response.

The frequency range of average American English is roughly 100-10,000 cps; that for music is much broader and that for natural and man-made noises quite variable. However,



hi-fi music becomes noticeably lacking in quality whenever the frequency range of the hi-fi set is reduced below approximately 100-13,000 cps. As most of us are aware, telephone communication drastically alters the quality of music; it also changes the certainty with which proper names and unfamiliar terms can be transmitted via the telephone. For reference purposes, the frequency response of our telephone transmission system in use today is approximately 300 cps to 3300-3600 cps.

The frequency response of the ear itself in most children requiring special education on the basis of deafness is seriously restricted. And as mentioned earlier, the usual restriction comes from loss of function in the higher frequencies; almost all educationally deaf children have some low frequency residuum.

#### Overview Of A Hearing Aid.

No matter how hi-fi or complex an electronic hearing aid becomes there are three stages common to each; input stage, amplification stage, and output stage. The input stage includes such devices as microphone, phonograph, tape recorder, sound track from movie projector, TV receiver, AM-FM radio tuners, etc. The amplification stage includes vacuum tubes and/or transistors that serve to increase the electrical energy received from the input sources. The output stage consists of such devices as a loudspeaker, earphone (sometimes referred to as a 6cc coupler and worn with

a headband), and personal hearing aid insert receivers (referred to as a 2cc coupler because of its attachment to an ear mold inserted into the ear canal).

Each component within an electronic amplification system has its own peculiar way of handling frequency, intensity and time. The same questions asked of the impaired auditory system must be directed to the amplification devices considered for use in the education of the deaf. In the final analysis one must ask how much acoustic distortion is produced within the ear itself, how much distortion the amplification device coupled to the ear produces and finally, how much distortion the overall system produces between the auditory stimulus initiated in the environment and the resultant information that arrives in coded form within the brain.

#### Types of Hearing Aids.

Hearing aids can be classified in a variety of ways; according to their portability, type of electronic circuitry used, frequency response characteristics, and point of placement of the aid on the body, to mention but a few.

Group Hearing Aids traditionally used since World War II have been of the nonportable wired type using close proximity microphones and headsets with earphones attached. From the standpoint of acoustic fidelity this type has been of high quality. The typical system provides relatively

flat amplification from approximately 100-6000 cps. The chief limitation in frequency response in this type of group aid has been the earphone. It should be understood, however, that 100-6000 cps is quite adequate for handling speech signals particularly in view of the low distortion present in this type of unit. The drawbacks are not essentially acoustic in nature. The principal shortcoming of this type is the inflexibility of being "wired down" to the common transmission line feeding each of the control boxes into which the headsets are plugged. Any departure from this type of amplification system generally requires some reduction or compromise in acoustic fidelity; therefore, for purposes of this discussion, the quality of the "wired down" can be used as a "standard" or frame of reference with which to compare the various types of hearing aids.

The original earphone cushion MX-41/AR used with the "standard" auditory training unit as described was found to be too uncomfortable for long periods of wear. Because of its shape, an additional problem called auditory feedback became fairly prominent. Plastic and foam rubber have been substituted in attempts to achieve more comfort and a better acoustic seal (to prevent feedback). However, a slight problem exists when the cavity of the earphone cushion becomes larger than that of the MX-41/AR; the total acoustic pressure delivered at the ear drum of the person is likely to be on the order of 10-12 db less by changing from the MX-41/AR to a larger more comfortable plastic or foam rubber type.

The problem of comfort with the MX-41/AR cushion leads in some cases to the substitution of an insert receiver (hearing aid type) for the standard earphone worn on a headband. This practice altered the "standard" frequency response characteristics of the auditory training units by reducing the frequency range and increasing the amount of acoustic distortion.

Attempts to "unwire" the teacher, and provide an input for students, led to the use of microphones hung from ceilings, attached to walls, or those held by floor stands. Although the microphones were of similar acoustic quality to the standard, they operated over a 360 degree range picking up unwanted ambient noises. In addition, it was known that the power output of the unit decreased with distance from the microphone and of greater consequence, it was learned that greater amounts of distortion occurred as distance of sound source from microphones increased.

A more recent approach to "freeing" the teacher has been through the use of wireless microphones. In this case a lapel microphone pack includes an AM or FM transmitter (to the basic auditory training unit). Properly selected wireless microphones provide quality comparable to the wired-type microphone although at much greater cost at this time. Interference from commercial and other broadcasting stations frequently occur but can be eliminated by taking certain actions.



The desire to provide more freedom and flexibility of movement on the part of the student led to the development of loop systems. The earliest models used the inductance loop principle; more recently, radio frequency loops have been developed. Properly developed and installed loop systems have the potential for matching in acoustic fidelity the wired auditory training unit.

Commercially available individual hearing aids have been in common use since World War II. The market for which the manufacturers have routinely planned has been the individual who has developed a mild to moderate hearing impairment in adulthood. Wearable hearing aids are generally classified according to where (on the body) they are attached. Behind-the-ear hearing aids as a rule amplify only those sounds between 500 to 600 cps at the lower end and from 3000-4000 cps at the upper end. The typical 500-3500 cps frequency response range is much less than the 100-8000 cps available in the standard auditory training unit. Eye-glass hearing aids are similar in acoustic characteristics to the behind-the-ear models. In-the-ear-models do not differ markedly from the two preceding types of personal hearing aids in frequency response but are appropriate for mild hearing loss cases only. The eye-glass and behind-the-ear models rated as high, moderate, and low amplification are designed for mild and moderate hearing losses. The body-type is still the principal choice for persons



with severe and profound hearing losses. The quality constructed body aid amplifies sounds between roughly 350-3000 cps with a considerable amount of distortion.

The most recent development in body-type hearing aids has been in the direction of broadening the frequency response. Emphasis has been placed on reproducing frequencies as low as 100 cps. This so-called low frequency hearing aid is approaching the response characteristics of the standard auditory training unit. It should be emphasized in the case of the existing low-frequency hearing aid that its uniqueness lies primarily in its feature of portability; it is not a new kind of amplification in the education of the deaf.

On the horizon is the transposer hearing aid. This type will be different from existing group auditory training units and individual hearing aids. The aim in developing a transposer hearing aid is to displace downward (electronically), on the frequency scale, certain high frequency sounds in speech or all the speech sounds. The reason for this downward shift is to attempt to fit speech into the frequency range where the greatest amount of residual hearing is present in so many severe and profound hearing loss cases. The transposer aid is in the experimental stage at present in both group and wearable forms.

### Subsystem C--Application to Education of Deaf Children

The highly developed brain in man, coupled with other critical physical features, makes it possible for him to develop and use highly intricate verbal languages. Until very recently it has been traditional in linguistics to consider speech and language as one and the same. The spoken acoustic symbol (speech) has served as the raw material for the linguist. According to his definition spoken acoustic symbols ordered according to certain rules was language; not so in the education of the deaf. It has been recognized from the earliest attempts to educate deaf children that methods of communication and language, although possessing some common features, need not be identical; certainly speech and language need not be synonymous. What then is meant by language? For the purpose of this paper language is defined as a system of conventionalized symbols having the purpose of communicating thought. Strictly speaking, a specific language could be verbal or nonverbal although our major concern relates to verbal language; in which case verbal means a system atized set of words however communicated. Some of the methods of interpersonal communication that are of practical concern in the education of the deaf include:

Acoustic symbols; speech production and speech reception through hearing, and

Visual symbols; reading lips, reading printed materials, reading finger spelling, reception of formalized sign

language; production of writing, lip movements in speech of deaf speaker, fingerspelling, and conventionalized manual signs.

The concern of this paper is not with the whole of language development, but rather, with the role of the auditory channel as a subsystem in language development of deaf children. A good deal of research from a variety of areas suggests that man's brain is so organized that it enables one to select information from the variety of stimuli impinging upon him at any given moment. As a rule, data from at least two or more sensory systems are being transmitted to the brain at any given moment during the wake state. The ability to attend and select one set of data and suppress others is part of normal functioning; if it were not so, an individual would be in the unfortunate state of being overwhelmed by incoming information with which he could not deal in a coherent fashion. Conversely, if the brain is forced to deal with minimal bits of sensory information, it appears to have the capacity for integrating different kinds of sensory data which it strives to assemble into a cohesive whole. The former condition of limited control might be characteristic of some children with central nervous system malfunction who are seen to be somewhat distractible and hyperactive. The latter situation appears to be characteristic of deaf children when they are in a situation in which they must rely on acoustic communication signals through the auditory

channel alone, through lipreading alone, or through these two in combination.

In order to emphasize this point let me restate the situation of the deaf child put forth in the preceding paragraph. At the beginning, the congenital or early onset moderate, severe or profoundly deaf child becomes heavily dependent upon his visual system as a means for keeping in touch with reality. If he were able to substitute the visual system for the auditory in an adequate manner he should not present the language problems he obviously does. Upon closer scrutiny it is obvious that in the deaf infant we are talking about hearing acoustic signals, on the one hand, and on the other interpreting speech signals through lipreading. These visual data sent to the brain represent less than the total information spoken. The efficiency of lipreading as a coding technique for the brain as indicated in a considerable number of studies suggests about 40-50% efficiency for unselected speech materials. The auditory receptive speech discrimination ability in cases with moderate, severe, or profound deafness also is less than 100%; the speech discrimination capacity of these three differing degrees of hearing also might range somewhere from as low as 0% to as high as 60 or 70%. Neither system, lipreading or hearing alone, enables the brain to receive the full linguistic message. This applies to the congenitally deaf person and to those whose age at onset occurred any time after the normal development of speech and language.

Bisensory Stimulation Studies, utilizing lipreading and amplified sound, clearly demonstrate significantly greater efficiency when the two sensory systems are used together than either alone. This has been consistently demonstrated with normal hearers lipreading and listening under experimental noise conditions and deaf persons with hearing losses as great as 85-90 db relative to the 1964 150 reference level (see Frisina, 1963, for more detailed discussion of bisensory stimulation). The critical point to be understood in the consistent bisensory advantage is that neither sensory system, auditory or visual, coded the acoustic signals in an unambiguous manner for the brain. The end result of either or both was always less than 100% correct reception of the message.

The bisensory advantage does not always manifest itself. Whenever either system can code the message unambiguously for the brain the brain apparently tends to choose one or the other and can do equally well with either. This is suggested in a study of paired associate learning (Graunke, 1959). An attempt was made to determine the rate at which a person could learn to associate pairs of words when presented in the printed form, spoken form, or when both forms were presented simultaneously. Deaf and hard of hearing children learned the task as quickly through vision alone as when the auditory and visual were presented simultaneously. Gaeth (1960) followed this with a more



elaborate approach in 1960 and again more recently (OE 1001). The results of his studies in paired associate learning demonstrated again that hearing children could learn the lists as quickly through vision alone, or auditory alone, as when both were used together. In hearing children the brain received 100% through printed words, 100% through auditory (because they did not have hearing problems) so when the two were used together it apparently made a choice of two efficiently coded messages. The deaf subjects did as well on the visual printed as they did on the combined audio and visual presentation but those with moderately severe to profound (61 db ASA and above) could not learn through the auditory system alone. The totality of these experimental data reinforce the notion that the application of the auditory channel in the education of deaf children is not necessarily a unitary phenomenon. The role of audition is somewhat dependent upon the learning task with which the deaf child is confronted. It is likely that his brain will work overtime to try to get a closure on pieces of information that do not carry 100% in one sensory subsystem but when it can get 100% through a single system it is likely to choose that one and, in effect, suppress or relegate to a less important role from other data.

#### Consistency and Constancy.

With the factors and concepts presented earlier in mind, one can next move to consider actual implementation of

the auditory channel within the systems concept. Maximizing the contribution residual hearing can make in a given case depends upon two concepts I call consistency and constancy; consistency relates to non-acoustic factors whereas constancy relates specifically to acoustic characteristics of hearing aids. Whether or not hearing impaired children receive maximum utilization of residual hearing depends upon several nonacoustic factors. Some of these can be controlled easier than others; nonetheless, the extent to which these are brought under control will be reflected in the positive contributions made by use of the auditory channel in communication, educational attainment, and personal and social adjustment. Understanding of the hearing loss and the multiple reasons for hearing aids in deaf children on the part of parents is fundamental in carrying through the overall goals of auditory training. If the parents 1) can understand and can follow through in keeping the aid in working order at all times, 2) can provide interesting and worthwhile auditory stimulation at home and 3) can attach significance to the wearing of the hearing aid, the use of the auditory channel will be well on its way.

Teachers must have the same kind of information about the hearing problem and enthusiasm for the hearing aid. Keeping the aid working at all times and providing practice in the perception of auditory stimuli are no less important to the teacher than the parent. Consistency in hearing aid use

is essential to optimum auditory training.

Constancy as indicated refers to general acoustic characteristics of hearing aids. Every amplification device whether personal or group has some distortion in reproduction. Hence the acoustic fidelity of a hearing aid is a basic factor in selecting amplification devices. However, fidelity is not the only consideration in the selection of hearing aids. The extent to which an individual hearing aid maintains its original acoustic characteristics is of vital importance. Constancy of acoustic behavior of an aid and consistency in utilization are perhaps the two prime factors in achieving maximum returns from hearing aids once properly selected for an individual.

Mobility is another basic factor in selection and use of amplification devices. Portability and related ease in moving about freely in one's environment is a desirable feature to be included in hearing aids if the characteristics related to fidelity are not sacrificed unreasonably. The mobility factor is probably more critical at the nursery-kindergarten levels than may be true above these. At this time the portability-fidelity factors have not been resolved. Some attempts at loop systems appear encouraging from the mobility of students standpoint. Initial cost and upkeep of some, spill over from one room to the next, and microphone cords to the teacher are still problems to be worked out. Comfort from the student's point of view raises the

question of insert receivers versus earphones. Maintenance seems to be greater with insert receiver cords than earphone cords although the latter are more comfortable. The acoustic characteristics of inserts are not as good as earphones and probably do not hold up as well over time. These factors do not exhaust the acoustic considerations that should be part of decisions concerning the selection and purchase of personal and group aids for application to the systems concept in education.

#### Electronic Amplification In Daily Learning Experiences.

The application of electronic auditory amplification devices in the education of the deaf began to flourish in the years immediately following World War II. Organized efforts in behalf of hearing impaired children since then have come to include auditory training equipment and methodology as essential in the overall educational program. Variations in methodology have been in evidence but there is no question that the availability and use of auditory amplification devices have been accepted as fundamental to daily teaching procedures.

In many instances the full potential of the auditory channel has not been exploited in the education of the deaf. Realizing less than optimum potential of residual hearing has resulted in part from 1) limited application of knowledge concerning the auditory system in deaf children; 2) limited familiarity with available electronic



hearing aids; 3) limited knowledge of advanced technology and resultant lack of experimentation; 4) financial limitations that preclude many opportunities for applying new techniques outside a rigid experimental framework; and 5) the difficulty in dealing effectively with the varietal levels of interest and abilities of significant people in a given child's life inside and outside the specific academic day.

Significantly improved personal and social attainments on the part of deaf children in later adulthood could result simply from more effective manipulation of the variables suggested in these five points, in spite of the fact that this list is not intended as exhaustive even from the point of view of the auditory channel.

#### The Auditory System In Continuous Education.

Continuous education from infancy to adulthood in the case of deaf children is at least as important as in nondeaf children; it could even be argued that it is more important in the case of the former. The importance of early detection, accurate assessment of deafness, and the initiation of an optimum program for child and parent cannot be overstated. The auditory channel requires early and appropriate selection of acoustic coupling. Systematic reassessment of the auditory system and hearing aid should be a routine part of the continuous educational program of each child, particularly in view of the changes indicated



by new technology at any given point in time. The auditory needs of deaf children also change according to various developmental levels and accordingly require reevaluation and counseling relative to the auditory system and hearing aids.

#### Full-Day Use of Auditory Channel.

Nondeaf persons have the benefit of rather complete immersion in an auditory world. Much incidental learning in the case of hearing children thus proceeds in a continuous fashion. Most deaf children, at best, are receiving chunks and pieces of the auditory world. Such mundane, but nevertheless very significant, matters such as dead hearing aid batteries, broken hearing aid cords, defective ear-phones or insert receivers, and broken wires are among the daily intruders to consistency in use of the auditory channel. Correction of the maintenance problem, alone, can make a real difference in the effectiveness of an auditory training program.

The link between home and school too frequently is weak; the link between the academic program and supplemental possibilities inherent in dormitory living is often not maximized. Educational media can provide the common meeting ground for the several important ingredients (of which the auditory channel is one) in the overall educational program. Not all, but many prepared visual materials that are common

to school, dormitory, and home have an auditory counterpart that can be exploited. For example, movies designed strictly for fun can become more meaningful if the auditory channel is provided through the youngster's own hearing aid or linked electronically to the output of the projector itself. Home TV receivers can be tapped to feed directly to the individual's hearing aid via the aid's telephone call and thus eliminate other environmental sounds; loop-type hearing aids can provide maximum mobility within a classroom and for two-channel loop receivers the system could be used in the library, in individual study carrels, and auditorium.

For years some parents of deaf children have been successful in providing full-day amplification for their children. Unfortunately this has not occurred in enough cases to consider it routine. Hopefully emphasis on and availability of visual devices for home and dormitory use might have a positive influence on the amount and kind of auditory stimulation received outside the classrooms.

#### The Auditory Channel In The Development of Certain Language Skills.

The reception of speech and production of speech are the initial language skills learned by non-deaf children. Later these lead into the added skills of reading and writing. Speech frequency wearable and group hearing aids have been employed in the development of speech and language in

deaf children. The research results concerning unisensory versus multisensory learning of speech, speech reading and reading remains somewhat equivocal at this time. The critical variable suggested early in this paper was the integrity with which the end organ (inner ear or retina) coded verbal information for transmission to the brain. It was suggested that if the subsystem of vision or hearing codes less than 100% of the information being conveyed, the brain of the receiver will attempt to use both types of sensory data in getting the message. However, if either system provides 100% of the verbal message to the brain the brain is likely to use one or the other and not rely upon both.

#### Auditory Channel And Reading.

Hofsteator (1959) clearly demonstrated that learning language and reading could be accomplished in a congenitally deaf person without use of the auditory channel. Gates (1926) and Thompson (1927) many years ago demonstrated that deaf children could learn to read through a visual approach. More recently a controlled study by Roy, Schein and Frisina (1964) demonstrated that deaf children as young as 3 years of age could learn language through programmed visual materials. The proceedings of the Symposium on Research and Utilization of Education Media for Teaching the Hearing Impaired held in Lincoln last year (Stepp, 1965) includes on-going research studies in the unisensory approach to

reading and language development. The effectiveness of a unisensory approach to reading as compared with multisensory remains equivocal. In a study of silent reading supplemented with rich vocal response on the part of students significant gains were noted in a relatively short time (Kopp, 1963). A pilot study based on linguistic principles reported by Woodward (1963) called attention to the possible link between "... written and spoken language, particularly where complex sentence structure is involved." Some approaches to reading as a language skill in deaf children have included 1) a purely visual approach such as that characterized by Gates (1926), Thompson (1927), Hofsteater (1959) and Karlson (1965); 2) silent reading on the part of the student in the specific act of reading but coupled with language enrichment through multisensory stimulation in the accompanying student responses in class discussion (Kopp, 1963); and 3) a program of reading and language learning based on oral reading.

#### Acoustic Channel and Speech Reading.

The role of the acoustic channel in speech reading has been mentioned earlier (Frisina, 1963). When approached from a linguistic point of view the addition of the acoustic channel increased efficiency from 44% to 85% (Woodward and Barber, 1960); Numbers and Hudgins (1948) reported an increase from 43% to 65% by adding the auditory channel in the case of deaf children; Hudgins (1953) in a study of

auditory training with deaf children reported similar gains; similar results have been found with Gallaudet College deaf students in cases where the loss of hearing does not exceed 90 db relative to the new international normal threshold.

#### Acoustic Channel And Speech Production.

Speech of course is based on acoustic signals. Perceiving the speech of others and monitoring one's own voice through the auditory channel is the surest means for developing intelligible speech production. Hearing aids have great applicability in development and shaping of a vocal output; particularly in those whose loss does not exceed 90 db (Re 150 Standard). Experimental data specifically related to speech production and reduced hearing levels are not plentiful but the results of a great deal of teaching experience and clinical practice have illustrated the role of hearing aids in speech development. An important point that might be made relative to educational media is the influence of group amplifiers (as well as individual) on the teaching of speech. Prior to wearable and group hearing aids of the electronic type, the task of teaching speech to deaf children was necessarily done on an individual teaching basis. Since the majority of children requiring special education on the basis of deafness can benefit to some degree from amplified sound, incorporating the auditory channel in educational media carries with it the possibility of enhancing speech production even more.



### The Acoustic Channel In Independent Study.

The role of audition in individual study in the classroom, library, in the dormitory, and at home can best be determined by knowing the task to which the child addresses himself independently. It is possible that the applicability of programmed instructional techniques is of relatively greater importance to deaf than hearing children. Because the development of linguistic skills in deaf children demands more intensive individual and small group attention, best use of every child's academic day is not likely to be achieved since the teacher must divide his time among the class, particularly for speech development and speech correction. Furthermore, efforts must be made to compensate for the extreme loss of incidental learning opportunities imposed on the deaf child. Programs of the type presently being developed by Withrow (1965) and others wherein auditory and visual supplements to teaching are being produced, appear to have real promise. The full gamut of audiovisual materials can be applied on an individual as well as group basis in the dormitory, at home, in the library and in the classroom. Coupling the audio output of the projector, tape playback, or other source to the individual's hearing aid or providing a fixed auditory training amplifier for the individual presents no major problems.

In conclusion it should be emphasized that in order for maximal educational benefits to accrue in each child

it assumes, among other things, 1) an understanding of the auditory system of the deaf individual, 2) an awareness of available auditory devices at a given point in time and what is optimum for the individual's residual auditory potential, 3) a critical analysis of the reason for pursuing each task included in the total educational program for each child, and from this determine the rationale for employing the auditory channel and 4) quantification of results of different approaches in order to provide new directions in the use of media in the education of deaf children.

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